PACKAGE engineering

The knack of making a line effective

One of the deans of packaging reviews operable shortcuts and equipment innovations contributing to line efficiency—stressing quick changeover, ease of machine-to-machine transfer of containers. (See page 31)

Want to determine filling machine accuracy?

A close look (complete with workable equations) at how to analyze test data, set average overfills and allowable underweights, establish control limits—all to develop a system of package weight control. (See page 35)

Ten steps to package superiority

Turning out flexible packages (using nitrogen) that resist water vapor and oxygen transfer for two years calls for specifications, tests, and a desire for quality by those concerned with developing and producing these packages. (See page 42)

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Our editorial index for 1958
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DECEMBER 1958

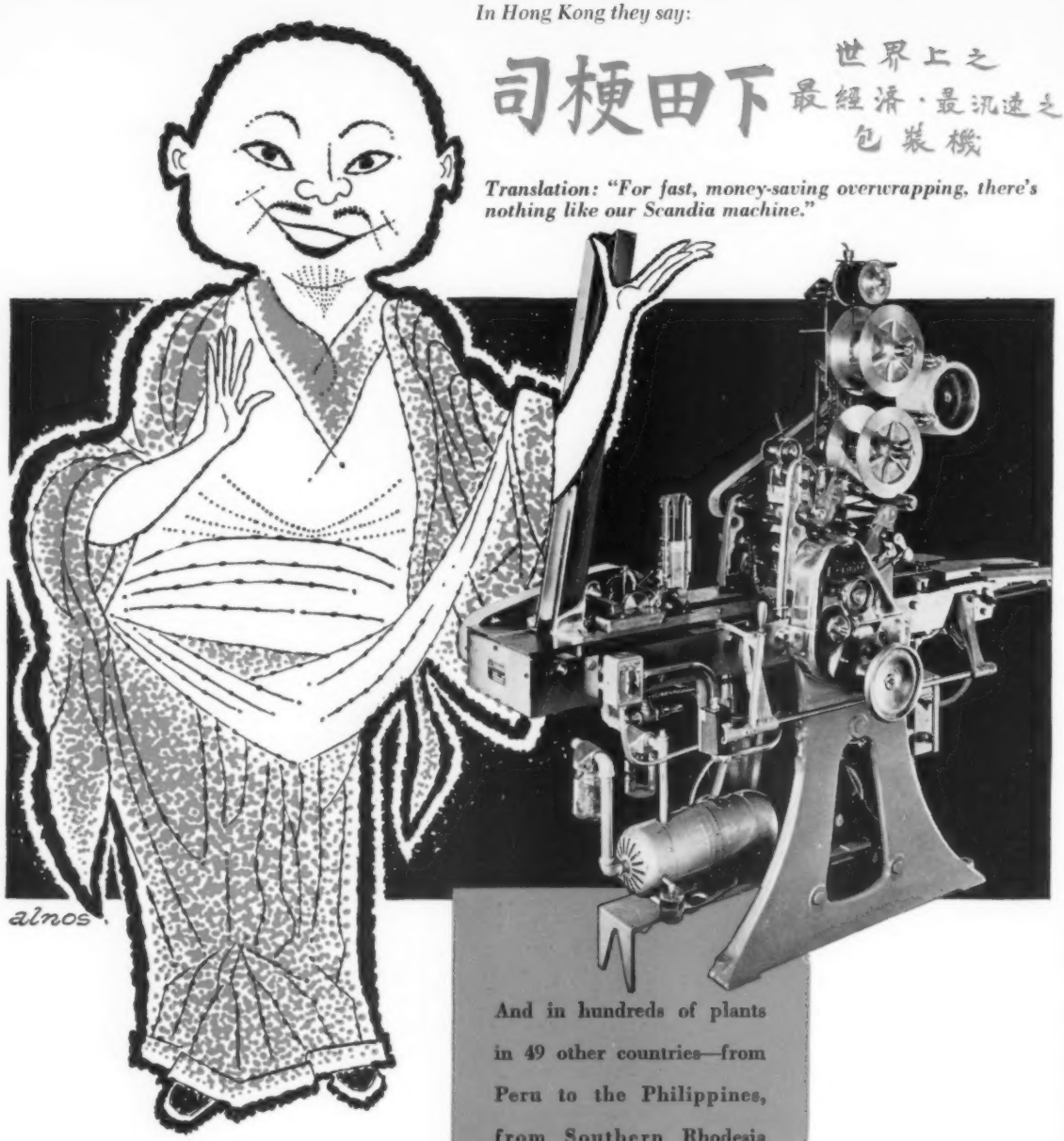
VOLUME 3 • NUMBER 12

BULK RATE
U. S. POSTAGE
PAID
PONTIAC, ILLINOIS
PERMIT NO. 81

In Hong Kong they say:

世界上之最經濟·最汎速之包裝機 司梗田下

Translation: "For fast, money-saving overwrapping, there's nothing like our Scandia machine."



And in hundreds of plants in 49 other countries—from Peru to the Philippines, from Southern Rhodesia to Thailand — Scandia's machines evoke the same praise.

CHARTING NEW PATHWAYS IN PACKAGING

SCANDIA
PACKAGING MACHINERY COMPANY
NORTH ARLINGTON N. J.

Makers of Standard and Custom Machines for Bundling · Banding · Multiple Wrapping · Stamping · High-Speed Wrapping

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Smarter, wiser by the bundle!

LOOK at these bundled packages of Electric Auto-Lite original service parts. Snugly sheathed with gleaming VITAFILM, they get quick and certain identification—lasting protection.

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DECEMBER 1958 • VOLUME 3 • NUMBER 12

PACKAGE engineering

AN ANGUS J. RAY PUBLICATION

For your calendar

February 20-23. 52nd Annual Exhibit of the Canning Machinery and Supplies Association, Conrad Hilton Hotel, Chicago. Contact: Mr. W. D. Lewis, Secretary-Treasurer, Canning Machinery & Supplies Association, 4630 Montgomery Avenue, Washington 14, D.C. *Telephone: Oliver 6-6979.*

February 21-24. 52nd Annual Convention of the National Canners Association, Conrad Hilton Hotel, Chicago. Contact: Mr. Nelson H. Budd, National Canners Association, 1133 20th Street, N.W., Washington 6, D. C. *Telephone: Executive 3-7030.*

March 31-April 1-2. Annual meeting of the Research & Development Associates, Statler Hotel, Washington, D.C. Contact: Col. Rohland A. Isker, secretary, Research & Development Associates, Food and Container Institute, 1819 W. Pershing Road, Chicago 9, Illinois. *Telephone: Lafayette 3-5500, Ext. 4262.*

April 13-15. AMA National Packaging Conference, Palmer House, Chicago. Contact: Mr. John L. Wood, American Management Association, 1515 Broadway, New York 36, New York. *Telephone: Judson 6-8100.*

April 13-16. 28th AMA National Packaging Show, Chicago International Amphitheatre, Chicago, Illinois. Contact: Mr. John L. Wood, American Management Association, 1515 Broadway, New York 36, New York. *Telephone: Judson 6-8100.*

May 17-21. Annual meeting of the Institute of Food Technologists, Bellevue-Stratford Hotel, Philadelphia, Pa. Contact: Col. C. S. Lawrence, Institute of Food Technologists, 176 West Adams Street, Chicago 3, Illinois. *Telephone: Andover 3-6268.*

November 16-18. 21st Annual National Packaging Forum of Packaging Institute, Hotel Statler, New York, N. Y. Contact: Mr. Charles A. Feld, executive director, Packaging Institute, 342 Madison Avenue, New York 17, N.Y. *Telephone: Murray Hill 7-8875.*

Nov. 17-20. Packaging Machinery Manufacturers Institute Show, New York Coliseum, New York. Contact: Hanson & Shea, Inc., One Gateway Center, Pittsburgh 22, Pa. *Telephone: Atlantic 1-8552.*

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42 Inspire your workers to produce effective packages, by Robert F. Dale, director, research engineering laboratory, production and research departments, Red Star Yeast and Products Company
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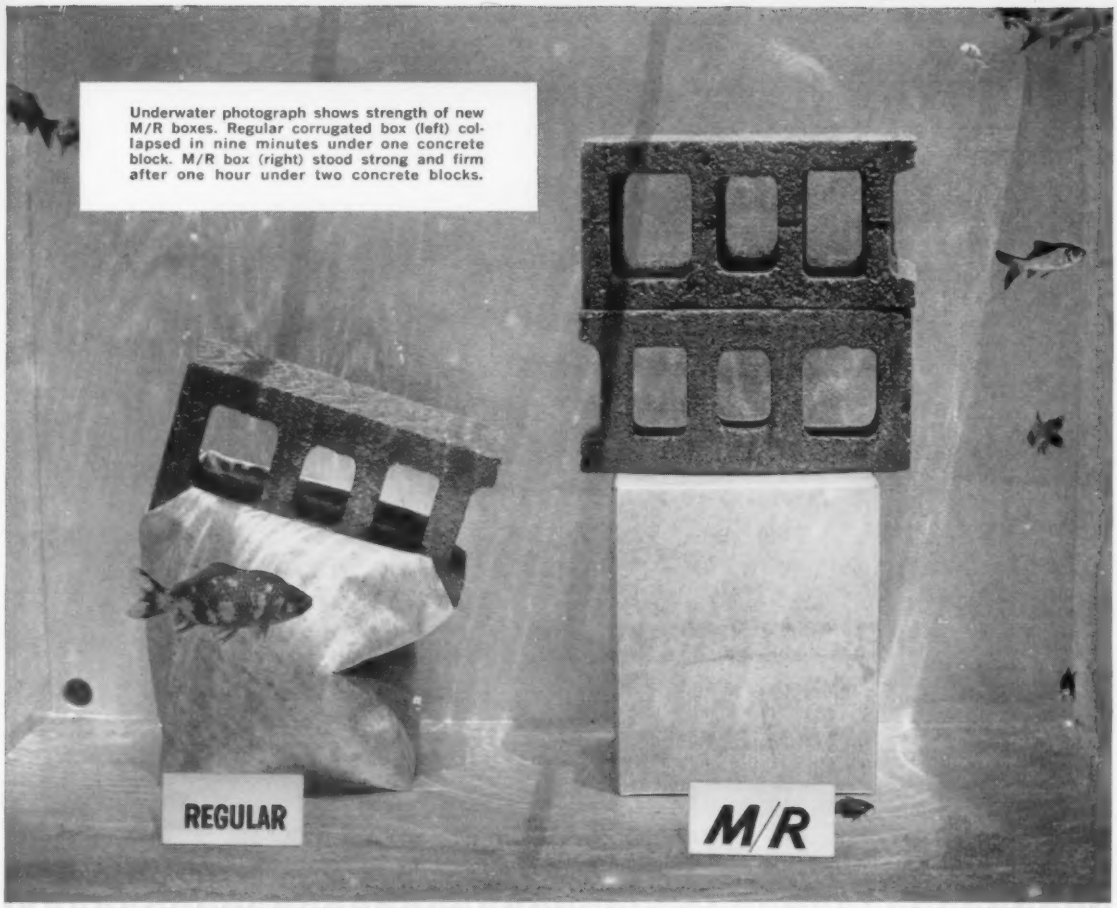

Underwater photograph shows strength of new M/R boxes. Regular corrugated box (left) collapsed in nine minutes under one concrete block. M/R box (right) stood strong and firm after one hour under two concrete blocks.

New *M/R* Corrugated Boxes

stay strong when wet... even under water!

Important news about Hinde & Dauch's new M/R (moisture resistant) corrugated boxes: Hydrocooler tests show M/R boxes shed water; stay strong and durable for packing and shipping all kinds of wet products. Moreover, M/R boxes stack high and straight, save packing and handling time, provide remarkable product protection. Initial tests indicate shipping damage to peaches reduced 50%. The smooth, clean surfaces of new M/R boxes can be colorfully printed with your brand message. H&D Package Engineers are ready to design an M/R corrugated box for your product. Write, wire or phone for complete information today!

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Please rush me samples and detailed literature on new M/R corrugated board.

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Company_____

Address_____

City_____ Zone____ State_____

A note from the Publisher

A few weeks ago, Society of Industrial Packaging and Materials Handling Engineers (SIPMHE) a nounced that it was changing its name to Society of Packaging and Handling Engineers.

This is, I think, a step in the right direction, although I think a better name would be Society of Packaging Engineers—a name that parallels the thoughts expressed in this column in September suggesting a single professional membership in the packaging field sponsored jointly by the above mentioned group and Packaging Institute.

The reasoning behind this suggestion is that it is illogical to split the technical packaging men because of differences in how the product is sold. I also suggested that SIPMHE, or Society of Packaging and Handling Engineers as it is now called, drop the Materials Handling from its name and from its activities.

We've had a number of letters from our readers on the September editorial—some agreeing, some disagreeing, with the thoughts expressed. Excerpts were printed from some of these letters last month, and this issue of PACKAGE ENGINEERING carries a few more. One of these letters was from John Mount, president of SIPMHE, taking exception to some of the points brought up. One point he makes is his belief that packaging and handling are tied so closely together they can not be separated.

I don't agree.

By the same reasoning you could say that the manufacturing, compounding, or fabricating operations preceding the packaging operation should be part of the packaging operation because of their relationship to packaging.

Definitely there is a certain amount of overlap in processing, packaging, and handling, but the packaging field is so big and complex now that I believe interest is diluted when a group gets too broad. For every man who joins the group because his functions happen to coincide, there will be ten who won't join because there are so many things that don't interest them. I believe Society of Packaging and Handling Engineers could do a better job serving a narrower segment of the packaging field which is extremely broad, without involving another phase—namely, handling.

True, there is talk today of the need for more "generalists" in business, but it is easier to be a "jack-of-all-trades" than it is to be master of one. While general management *has* to be aware of all phases of a business, I question whether it is the function of Society of Packaging and Handling Engineers to serve two different interests in the packaging field.

Why not have *one good* society devoted only to packaging engineers in companies packaging both consumer and non-consumer products, and leave the marketing and handling aspects of packaging to someone else?

Angus J. Ray

Publisher

PACKAGE® engineering

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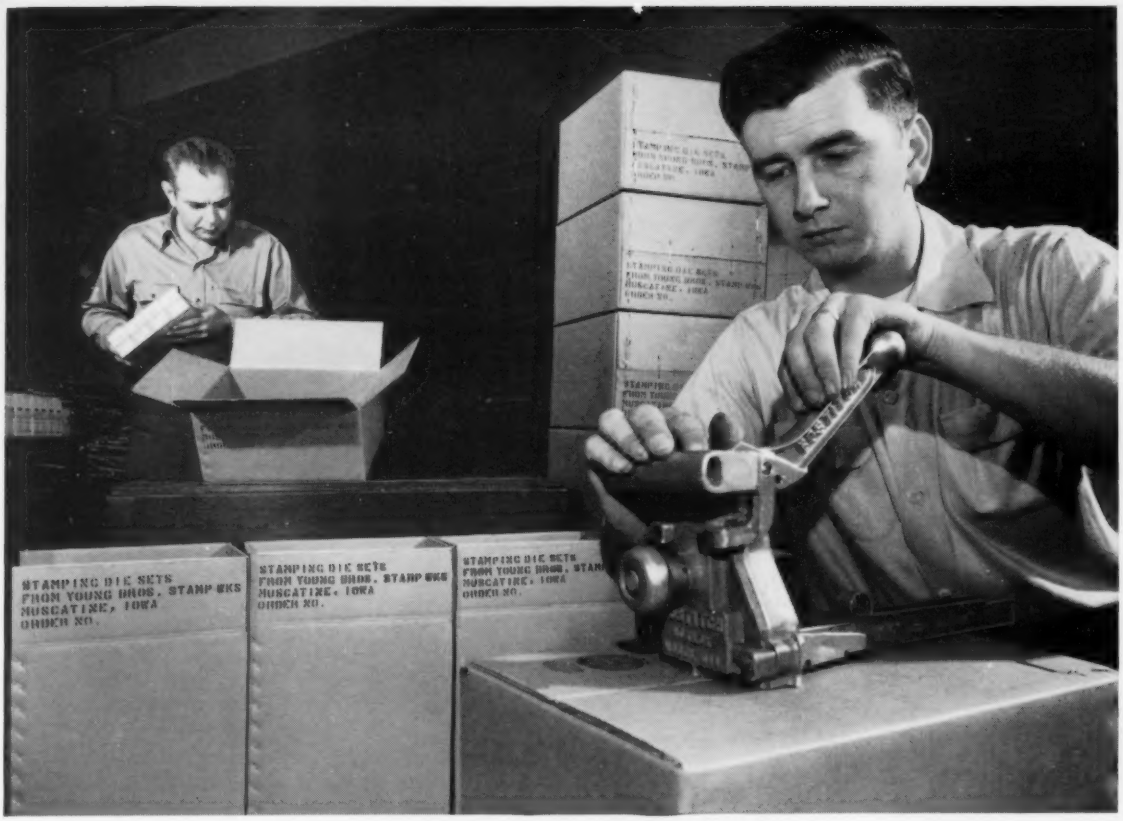

4000 cartons shipped without one fastening failure since changing to stapling

Heavy steel stampings leave this shipping room for destinations all over the U. S. and Canada. Shipping weight is up to 225 pounds per carton. Cartons are securely fastened with Bostitch wide-crown staples—10 each in top and bottom.

4000 cartons have been shipped since changing to stapled containers from nailed wooden crates. Not one fastening failure was reported.

Sealing these cartons with the Bostitch D14 wide-crown stapler is three times faster than nailing wooden crates. Packing costs are approximately one-third as much. Shipping charges are down because of reduced tare.

A Bostitch Economy Man helped this company find these competitive advantages in their shipping room. An Economy Man will gladly work with you to locate savings in time and money now hidden in yours. There is no obligation whatsoever. He's listed under "Bostitch" in your telephone directory. Call him or mark and mail the coupon for information.

Fasten it better and faster with

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STAPLERS AND STAPLES

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Please send me literature on the use of Bostitch equipment in the shipping room.

We ship _____ (Kind of product)

We now ship in _____ (Kind of container)

Our containers are fastened with _____ (Fastening method)

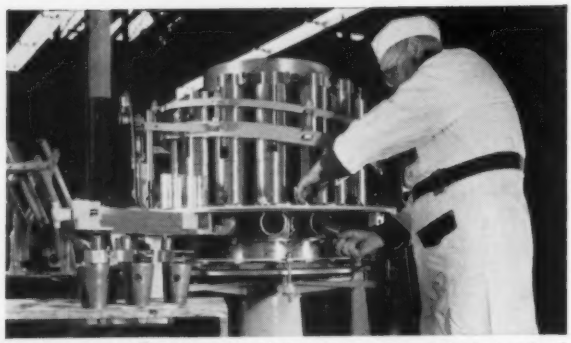
Name _____

Firm _____

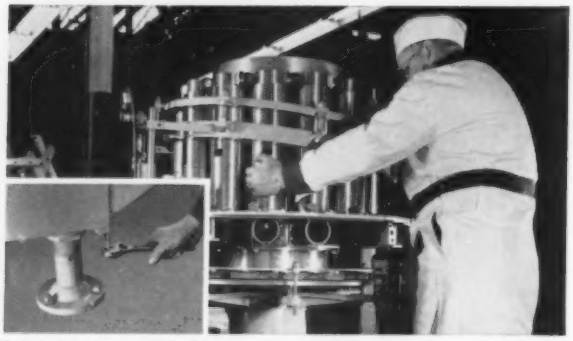
Address _____

City _____ *Zone* _____ *State* _____

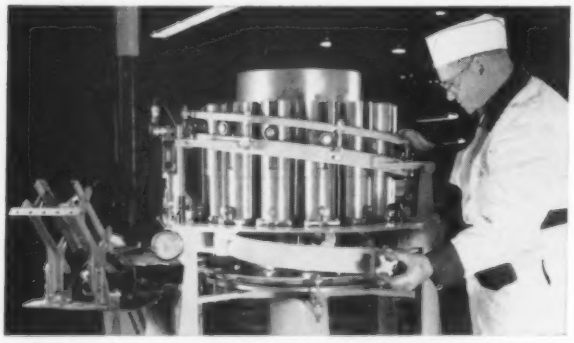
IN ONE HOUR



Operator saves 80% in time with height changes on *new* RP-214, since bowl and cam ring stay put. First, he raises pistons, then removes valve plugs.



Next, operator turns filler bowl to new height. Spacer ring on *new* RP-214 is adjusted by rotating bowl. Piston and valve cam ring are set by adjustable support leg screws (see inset photo).



Finally, valve plugs are replaced and pistons lowered into position. Operator closes valve cam ring access door. He then starts the machine!

CHANGE CAN HEIGHT ON *NEW* RP-214 FILLER

You can save 80% on height change-over time with *new* RP-214. It requires just *one hour*.

The *new* RP-214 retains all those features you find only on Pfaudler fillers: ±1/10 oz. accuracy at speeds up to 400 cans a minute.

No container—no fill mechanism; air operated for faster operation and less maintenance. One man cleans machine in just 30 minutes. Only four primary wearing parts, all inexpensive and easy to replace.

Write for Bulletin 973.

THE PFAUDLER CO.

a division of **PFAUDLER PERMUTIT INC.**
Dept. PE-128, Rochester 3, N. Y.

Letters to PACKAGE engineering

Re: Professional standards

Gentlemen:

I am very much in agreement with your position. I would like to go one step further; you stated that one of the most abused and least definitive terms in the packaging field is "packaging engineer." I believe you should have said one of the most abused and definitive terms in the *engineering field.*

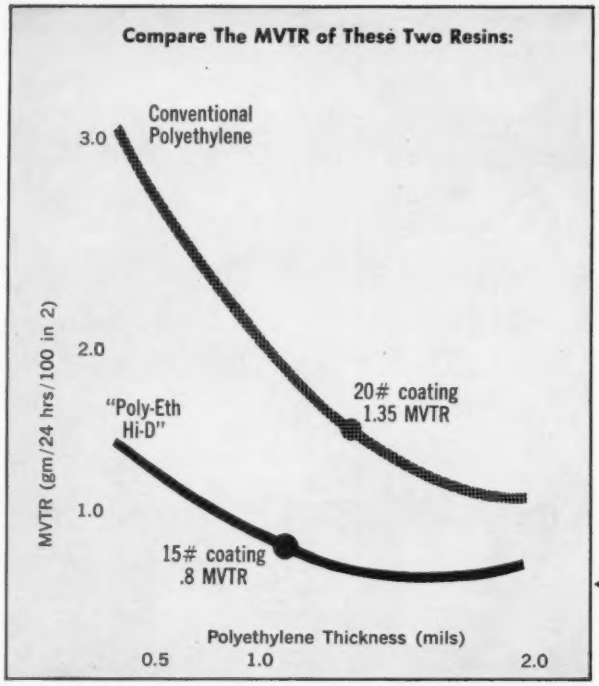
I have noticed repeatedly that within the electronics industry an engineer who designs the proper location and mountings of modules (such as amplifiers, relays transformers, vacuum tubes, and complex sub-assemblies) into final assemblies is called an "electronic packaging engineer." To me this is a misnomer from the viewpoint of the true packaging engineer engaged in the distribution of the end item as opposed to the design of the end item. This only adds to the confusion in the application of the term "packaging engineer."

I certainly agree that there is a lot in common with men engaged in packaging consumer and industrial products, and from that standpoint an agreement between SIP-MHE and PI to award a single certificate to professional packaging engineers would be a good idea.

Peter Henningsen
Packaging Engineer
Minneapolis-Honeywell
Regulator Co.
Minneapolis

Gentlemen:

It seems to me that your main point concerns the establishment of a "certificate of recognition" for the packaging man. This is an excellent idea and let me say that we as a national professional society have been working towards



▲ **Moisture protection is vital** to our product, Spencer "Mr. N" Ammonium Nitrate because of its hygroscopic nature. By switching to "Poly-Eth Hi-D," we got . . .

◀ **Even better moisture protection** at a big saving! As the chart at left shows, a 15-lb. coating of "Poly-Eth Hi-D" has a lower MVTR than a 20-lb. coating of conventional polyethylene. For facts and figures on our savings, see complete story below:

How We Cut Our Own Packaging Costs 3% By Switching To A "Hi-D" Moisture Barrier:

This new development can save you big money, as it did us, on moisture-protected multiwall kraft bags. Here are the facts:

Every year, we use millions of kraft multiwall bags to package the Spencer "Mr. N" Ammonium Nitrate Fertilizer we manufacture. Moisture must be sealed out of the bags, or the tiny prills of ammonium nitrate would lock together into a solid block, hard as concrete.

Until recently, the bags were lined with conventional "Poly-Eth" polyethylene, which we also produce. Now, laboratory and storage tests prove that we can get the same or better moisture protection from a 15-pound coating of our "Poly-Eth Hi-D" than we could get with a 20-pound coating of conventional polyethylene. This reduced our bag costs by 3%. Here are the actual figures:

Bags with 20-lb. polyethylene laminate $204.40 per thousand bags

Bags with 15-lb. "Poly-Eth Hi-D" laminate.....$198.60 per thousand bags

Total Saving.....$5.80 per thousand bags

Additional savings are possible with "Hi-D" coated paper. For example, one bag maker reports the following: with conventional polyethylene-coated kraft paper, bags are produced at the rate of 150 a minute and at a lubricant cost of $100 for a run of 40,000 bags. With "Hi-D"-coated kraft, bags can be made at the rate of 225 per minute and lubricant cost is reduced by half.

Both package users and makers should benefit from this lower-cost laminate. Laboratory tests indicate that the excellent adhesion and outstanding grease-proof qualities of "Poly-Eth Hi-D" offer a wide variety of uses in packaging protection, at a price never possible until now.

To find out for yourself how "Poly-Eth Hi-D" can fit into your particular packaging operation, contact your nearest Spencer sales representative, or write to Spencer Chemical Company at the address shown below:

SPENCER CHEMICAL COMPANY
Dwight Bldg., Kansas City 5, Mo.

Labeling Lines

by George L. N. Meyer, Jr.

DETERMINING THE SIZE AND SHAPE OF LABELS FOR TAPERED TUMBLERS

All too frequently labels are designed on a "By guess and by gosh" basis with all concerned hoping for the best. Many times, the application of these labels becomes a hardship if preliminary planning is neglected.

Any label that can be applied by mechanical means can always be determined mathematically. True, graphic means can be used, but in using the mathematical method you are assured of complete accuracy.

• • •

Determine the length of the label "L" and also its location above the bottom of the tumbler. From your glass standard drawing measure diameters D_1 & D_2 (Bottom and top of label). Determine the percentage wrap around required based upon a complete wrap around being 100%.

K = Percentage Wrap

Example: For a 25% Wrap, $K = 0.25$

A_1 = Length of ARC at bottom of label $= K \Pi D_1$

A_2 = Length of ARC at top of label $= K \Pi D_2$

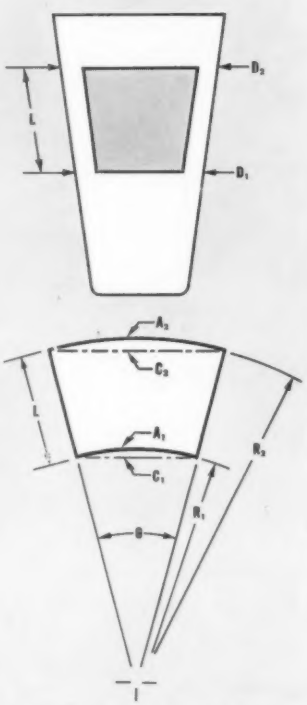
R_1 = Bottom Radius $= \dfrac{D_2}{D_2 - D_1} \times L$

R_2 = Top Radius $= R_1 + L$

θ = Label Included Angle $= \dfrac{A_1}{2 \Pi R_1} \times 360$

C_1 = Bottom Chord $= 2 R_1 \sin \frac{1}{2} \theta$

C_2 = Top Chord $\dfrac{R_2}{R_1} \times C_1$



Enlarged print on request.

The calculations assume that the Bottom and Top edge of the label are parallel with the base of the tumbler and the sides symmetrical with the taper of the tumbler.

If this simple method is used to establish a "standard" you will experience far fewer problems on your production line.

World's Largest Manufacturer of high-speed Labeling Machinery

WORLD LABELERS

ECONOMIC MACHINERY COMPANY • Worcester 3, Mass. / Div. of Geo. J. Meyer Manufacturing Co.

this goal ever since our formation in 1945 as the Industrial Packaging Engineers Association. At that time we had to do a considerable amount of soul searching as to whether or not there was such a thing as "package engineering." Was there then or is there now a package engineer, and if so, what is the definition of him? Is package engineering a profession, and if it is, what makes it so?

With specific reference to your suggestion for a certificate, it seems to me that no certificate can ever be taken as a guarantee of qualifications. Qualifications have to do with education, experience, and ability to do a job. A college degree is not a guarantee of ability. It is simply an "attesting" that a student has completed a prescribed course of study in given areas of learning and that this same student has reached a certain depth of knowledge in the given subjects.

I fail to see that a "position of responsibility" has any bearing on the individual's qualification as a professional man. Stature or prestige have nothing to do with a person's being a professional man. But once he is a "pro," then he acquires prestige and stature.

I think we can get a better definition of the package engineer if we study the two words. "Engineering" is defined as the art and science by which the properties of matter and the sources of power in nature are made useful by man in structures, manufactured products, machinery, etc. A "package" is the sum of materials applied to or around a given commodity for the purpose of containing, protecting, transporting, or displaying it. The packaging engineer combines the two. This is quite a contrast to the definition in your "note" which states he is one "who performs package engineering."

As regards the question of "professional membership," what is wrong with the fact that there are a considerable number of specialists in the field of package engineering? Agreed there are specialists in corrosion prevention,

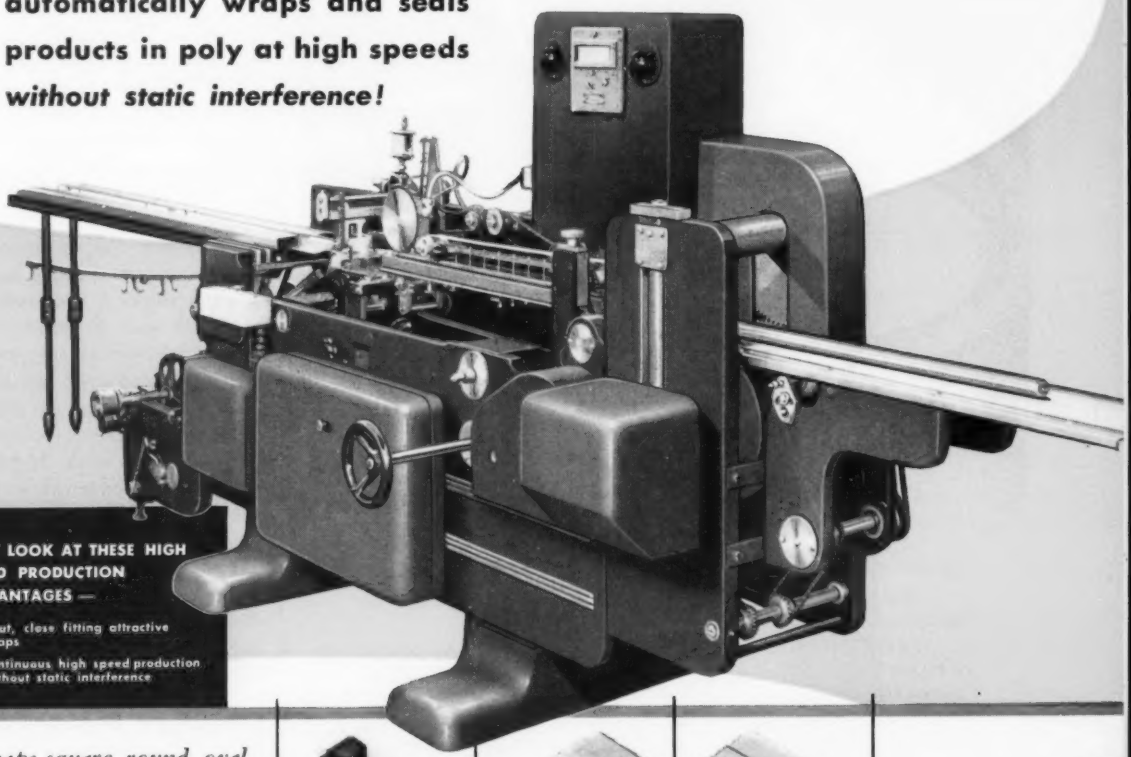
For more information write direct to manufacturer.

Circle No. 207 on Card

Here's the answer to your problems of how to—

Package Wrap with Poly

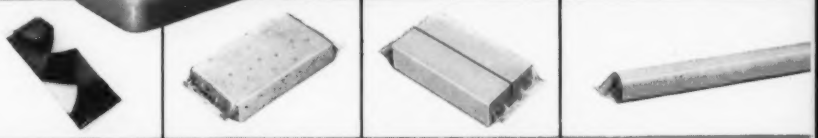
Continuous feed CAMPBELL WRAPPER automatically wraps and seals products in poly at high speeds *without static interference!*



JUST LOOK AT THESE HIGH SPEED PRODUCTION ADVANTAGES —

- Neat, close fitting attractive wraps
- Continuous high speed production without static interference

Wraps square, round, oval, cylindrical or irregular shaped products with equal ease



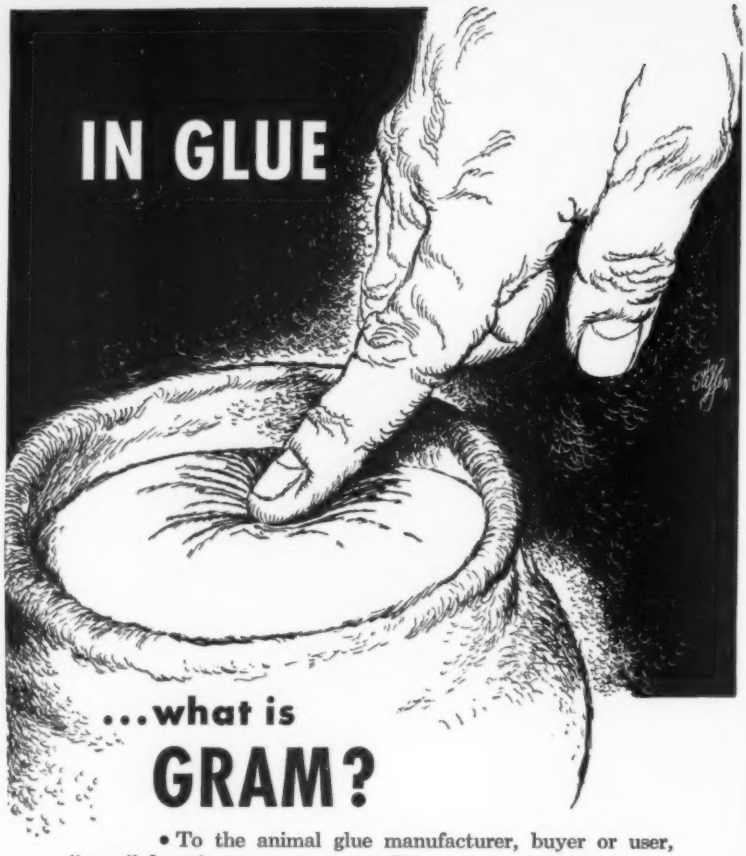
- Saves materials — wraps without stiffening boards unless desired.
- Saves labor with one person operation
- Controlled dwell time insures positive tube and cross-sealing
- Constant, automatically regulated heat controls
- Wraps without crush or breakage

It takes a CAMPBELL Wrapper to handle POLYETHYLENE *automatically* and still provide trouble-free, high speed packaging production. Exclusive "float" wrapping from continuously fed roll stock is the answer. In operation, tubing is formed from the Polyethylene web and "floated" around the product. Package is then sealed lengthwise, ends formed, sealed, and cut to length — *at speeds up to 90 units per minute!* There is no static interference slow-down or stoppages as in most sheet-wrap processes. On the Campbell Wrapper, Poly cross-sealing is controlled to provide the dwell time necessary for a positive seal. Investigate this modern, advanced design wrapper. You'll be amazed at the wide range of product shapes it can wrap — how much it saves in time, labor and materials. Send us a sample of your product so we can advise how the Campbell POLY-Wrapper may solve *your* problem.

Putting Ideas to Work

fmc
FOOD MACHINERY AND CHEMICAL CORPORATION

FOOD MACHINERY AND CHEMICAL CORPORATION
FMC Packaging Machinery Division
Hudson-Sharp Machine Company
1201 MAIN STREET, GREEN BAY, WISCONSIN



...what is

GRAM?

• To the animal glue manufacturer, buyer or user, *"gram"* doesn't mean HOW MUCH. It means HOW STRONG.

It's a measurement of GEL STRENGTH which in turn is an indication of adhesive properties.

In the old days, the strength of a glue was judged by poking a finger into a chilled glue gel. The degree of resistance determined the grade.

Today, modern laboratory apparatus replaces the "finger poking" technique and accurately measures gel strength in terms of weight in grams.

Also, better *production* techniques are now yielding much higher gel strength bone glues.

Within the extended range of grades offered by Darling & Company—

ONE OF THESE 7 SHOULD DO YOUR JOB MOST ECONOMICALLY

GREEN STRIPE	196-220 grams
ORANGE STRIPE	171-195 grams
ORANGE STRIPE	146-170 grams
RED STRIPE	121-145 grams
RED STRIPE	101-120 grams
RED STRIPE	81-100 grams
BLACK STRIPE	30-80 grams

Shipped in 100 lb. multiwall bags.
For prices and technical information see your Darling representative or write

DARLING & COMPANY
GLUE DIVISION
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Animal By-Products Is Our Main Business

DARLING'S improved BONE GLUE

cushioning, crating, boxing, to name a few. I agree with you that there is a lot in common between the industrial packaging man and the consumer packaging man, but your failure to recognize the bond that exists between the packaging man and the materials handling man surprises me. The materials handling man must move or handle the package and is concerned with it just as the packaging man is concerned as to how the package will be handled.

The basis for professional membership established by SPHE comprises age, education, experience, and competency. The Taft-Hartley Act and the Labor Relations Board have defined the professional engineer as a person doing essentially creative work. A professional employee is said to have predominantly intellectual responsibilities varying in character and involving consistent exercise of expression and judgment.

Professional work requires advanced knowledge in a field of science and is customarily acquired through prolonged courses of specialized study. Professional people generally subscribe to a code of ethics and in their business, social, and professional lives accept the responsibilities of professional conduct which bring credit to and the advancement of their profession.

John Mount
President
Society of Packaging and Handling Engineers
Chicago

Writing as president of SPHE, (the new name which members of SIPMHE recently gave their group), Mr. Mount, who is associated with Insurance Company of North America, Philadelphia, certainly stresses the maturing professional viewpoint of the individual members of his group. And we still think that various groups in the field of packaging should set their sights on a common professional recognition—as suggested by Mr. Henningsen in his letter. Too, we think it important to separate packaging from handling. (*End*)

Selecting the right container—the vital step in modern marketing—is your product insurance ■ Why not adopt the policy of many leading manufacturers—select Sheffield Process Tubes ■ Hundreds of America's best selling products—medicinal, drug and cosmetic, industrial and household—are selling better because they are properly contained in the modern, convenient safety of smart looking Sheffield collapsible metal tubes ■ You pay no premium for Sheffield's vast experience (more than a century) and complete facilities for tube packaging ■ Without obligation, discuss every phase of your packaging problem with a packaging expert—the man from Sheffield ■ Write for samples, catalog ■ THE SHEFFIELD TUBE CORP. ■ Home office: New London, Conn., Sales offices: New York, Chicago, Los Angeles

Sheffield Tubes

FOR MANY PRODUCTS

THERE IS ONLY ONE

PROPER CONTAINER

STOP PRODUCT WASTE—USE METAL TUBES!

The PULSE / of packaging

Trends to watch:

We hear there is increasing interest in a 10-mil polyethylene bag. Seed, corn, and fertilizer people are testing it extensively, polyethylene men think it has a big potential, note that heavy-duty heat sealing equipment is now at hand . . . Aluminum cans for food: **Franco-Italian Packing Co.** now puts sardine fillets in 6½ oz. oblong aluminum cans, drawn from blanks cut to size from sheets of 0.012 gauge aluminum . . . Wrapping machinery folks cite trend to more bundling of individual packages in films and papers—even with plain wrapping paper . . . Increasing use of nitrogen to propel pressure packaged products means more pressure packaging of surface active agents, according to aerosol men, who point to toothpaste, hand lotions, hair dressing, and vitamins in pressure packages . . . Something new for baby: Aluminum foil experts look to individual portion packages of frozen baby food in cook-in packages, predict asceptic packaging for these.

Groups in the news:

Packaging Institute plans special meetings for just its professional members in 1959, expects to start with one all-day session on frozen food packaging in January in New York . . . **SIPMHE** has changed its name to **Society of Packaging & Handling Engineers,** noting that its old name was unnecessarily long, restrictive in meaning . . . **Research and Development Associates of Food and Container Institute** announce the Rohland A. Isker award for 1959 to recognize an outstanding contribution by QF & CI personnel or other government people for outstanding contribution to national preparedness in the fields of food or containers . . . **American Standards Association** has published ten specifications for metal drums, pails from 5 to 55 gal.

Packaging across the seas:

The **Iranian Tobacco Monopoly** steps up its Teheran cigarette manufacturing, just ordered 51 wrapping machines from **Scandia Packaging Machinery Co.** . . . **General Motors Corp.** sent 22 packaging and shipping experts to the **U. S. Forest Products Laboratory** for a research conference focusing on overseas packaging, scrutinizing consolidation containers for air shipment, research in tape suspension of fragile articles inside containers, among others. GM says the FPL is doing "a terrific job." . . . **Milprint Overseas, Inc.,** subsidiary of **Milprint, Inc.,** held in Milan, Italy, the first of a series of technical packaging seminars. Technical men from nine European countries studied the lamination of films and foils.

More expansion for packaging:

Reynolds Metals Company has a new quarter million dollar pilot research plant and a new machinery development center in Richmond . . . **George J. Meyer Manufacturing Co.** now has a "substantial stock interest" in **Atkron, Inc.,** Cuyahoga Falls, Ohio, bottling equipment manufacturer . . . We hear that the **DuPont Company** is now back in the film extrusion field producing polyethylene film in a pilot plant and plans to have this film commercially available in a year or so . . . **Chisholm-Ryder Co. of Pennsylvania** has purchased **International Filling Machine Corp.,** Petersburg, Va. . . . **American Instrument Co.** has new sales offices in Murray Hill, N. J., Long Island, N. Y., Cleveland, Detroit, Denver, and San Francisco . . . **Kankakee Container Co.,** Kankakee, Ill., has been formed to make corrugated boxes, specialties, and related items. It will be a sheet plant operation . . . **Kartridge-Pak Machine Co.,** subsidiary of **Oscar Mayer & Co.,** has acquired **Mojonnier Associates, Inc.,** and **Mojonnier-Dawson Co.** Both companies will combine as the **Mojonnier Associates Div. of Kartridge-Pak** . . . **Cleveland Container Co.** has a new plant in Fairlawn, N. J., which will make composite cans, tubing, and cores . . . **Riegel Paper Corp.** has a new eight color rotogravure press, handling stock up to 44 in. wide . . . **Wrap-Ade Machine Co., Inc.,** has moved to larger quarters at Clifton, N. J. . . . **Continental Can Co.** has started operations at its new paper container plant at Three Rivers, Mich. . . . **American Viscose Corp.** has a new plant at Marcus Hook, Pa., expects to produce 50,000,000 lb. of cellophane a year, including polymer resin coated films . . . **National Starch Products, Inc.,** says the new Toronto plant of its Canadian subsidiary will produce first 5,000,000 lb., later 8,000,000 lb., of vinyl emulsion annually . . . **Hartford City Paper Co.** has enlarged its glassine paper facilities at Hartford City, Ind., can furnish papers up to 96 in. wide . . . **Diamond Gardner Corp.** expects to turn out 30,000 tons of molded pulp products at its new plant at Red Bluff, Calif. Diamond Gardner has purchased all the stock of **Chaplin Corp.,** South Portland, Maine, research and engineering firm that designs and manufactures pulp molding machinery . . . **Thomasson of Pa., Inc.,** has opened its new plant at Norristown, Pa. . . . **Enjay Co., Inc.,** is building a 30,000 sq. ft. addition to its laboratories at Linden, N. J., to be devoted to its "Escon" polypropylene . . . **St. Regis Paper Co.** and **F. J. Kress Box Co.** announce a merger agreement based on an exchange of 2¼ shares of St. Regis common stock for each share of Kress. The latter will operate as a division of St. Regis.

Packaging dollars and cents:

Crown Zellerbach Corp. reports third quarter earnings of $9,250,000, equaling for the first time in 1958 the company's sales and net income of the corresponding quarter of 1957. It attributes this to general improvement in business, operating efficiency, stepped-up demand for paperboard and containers in recent months . . . **American Viscose Corp.** reports third quarter sales of $58,272,000 (about 7 per cent above the third quarter of 1957) and earnings of $2,449,000, compared to $1,327,000 for the third quarter last year. Demand for cellophane and tire yarn were major factors in the improved sales and earnings . . . **Federal Paper Board Co., Inc.,** announces net income for the first 36 weeks of the year of $3,008,000 compared to $3,673,000 for the same period of 1957. Rising costs, not compensated by price increases in major product lines affected earnings, Federal said . . . **The Dow Chemical Co.** reports net income for its first fiscal quarter (ended August 31) of $11,175,730, compared to $14,137,911 for the same period of 1957 . . . **St. Regis Paper Co.** reports first nine months' net income of $12,732,541, compared to $14,683,600 for the first nine months of 1957, noting further improvement in this year's third quarter . . . **National Starch Products, Inc.,** had net income of $2,127,171 for the first nine months of this year, representing a 2.58 per cent improvement over 1957 . . . **Continental Can Co.'s** net earnings for this year's third quarter were up 17 per cent over the same period last year, and sales for the quarter were 5 per cent over those of 1957's third quarter . . . **Container Corp. of America** announces net earnings of $3,743,000 for the third quarter of 1958, compared to $3,557,000 for the same quarter of 1957 . . . **Interchemical Corp.** had a nine months' net income of $3,000,005, compared to $2,772,016 for the same period of 1957 . . . **Diamond Gardner Corp.** reports net income for the first three quarters of 1958 of $5,321,000, compared to $6,536,000 for the first nine months of 1957 . . . **Rheem Manufacturing Co.** reported a return to profitable operations in the third quarter of 1958 with net earnings of $81,551. Downturn in the national economy had adversely affected sales of all Rheem divisions for the first nine months of the year, as Rheem reports a net

THESE FIRMS

Do Better with Doughboy LABELERS

Mrs. Smith's Pretzel Co.
Easton, Pa.

J. P. Fritz Wholesale Co.
Newport, Minnesota

Bradley Candy Co.
Nashville, Tenn.

Dayton Nut Products Co.
Cincinnati, Ohio

Big-Tex Distributing Co.
Dallas, Texas

Fresno Macaroni Co.
Fresno, California

Burry Biscuit Co.
Elizabeth, New Jersey

General Candy Co.
Chicago 39, Illinois

Welch Nut & Candy Co.
Chicago, Illinois

Anderson Candies, Inc.
Wilmington, N. C.

King's Bakery, Inc.
Colledgedale, Tenn.

Seyfert Foods Co., Inc.
Fort Wayne, Indiana

C & C Distributors
Sharon, Pa.

Kimbell Candy Co.
Chicago, Illinois

Dorothy Flicek Industries
Chicago, Illinois

Boston Sausage & Provision Co.
Boston, Mass.

D. F. Stauffer Biscuit Co.
York, Pa.

Reed & Prince Mfg. Co.
Worcester, Mass.

Wells Mfg. Co.
New Vienna, Ohio

More Candy Co.
Rochester, N. Y.

Mrs. Slaby's Noodle Co.
Berwyn, Ill.

Ohio Art Co.
Bryan, Ohio

School House Candy Co.
Providence, Rhode Island

The Fleming Co., Inc.
Topeka, Kansas

Peanut Products Co.
Indianapolis, Ind. and Des Moines, Iowa

Walter Johnson Cookie Co.
Tulsa, Oklahoma

Flavour Candy Co.
Chicago, Illinois

Mason Candy Co.
Trinidad, Colorado

Barnard Nut Co.
Miami, Florida

H. H. Even Co.
Chicago, Illinois

Mamma's Cookies Bakeries
Cicero, Illinois

Whites Food Products Co.
Oakland, California

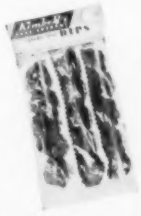
Pack twice as fast with

Doughboy

JAW SEALER-LABELERS

MODEL PJS

The new Doughboy Jaw Sealer-Labeler will do the work of two and sometimes three ordinary labeling machines. As soon as the bag touches the vacuum (air) control, the machine takes over and leaves operator's hands free to reach for the next bag. It automatically labels, seals, and if desired, codes and punches the package. The automatic cycle cuts operator motions, increases production speed and assures better packaging. Pneumatic pick-up assures *positive* single label delivery from label box to sealing jaws. Label clamp holding bar assures *positive* positioning of label at sealing jaw. Adjustable folding bar assures *positive* label folding.



CODER AND HOLE PUNCH OPTIONAL

Coder and Hole punch are optional. An embossed code is precision made from metal type which is easily placed in accessible holder at the front of the sealing jaw. The punch, made of high carbon steel, punches a clean edged, round hole exactly centered in label.

Doughboy

INDUSTRIES, INC.
MECHANICAL DIVISION
NEW RICHMOND, WISCONSIN, U.S.A.

Barrier Experience is Combined

TO PRODUCE

BETTER BARRIER COMBINATIONS

for converters and direct users:

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PLASTIC ✓
FOIL ✓
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HPS teams up talent and materials to produce packaging with a purpose, with features such as: Greaseproofness, Wet-Strength, Durability, Moldability, Sealability, Acid, Gas, Odor Resistance, Compatibility, Performance, and Cost. The resulting functional materials for packaging or other protective applications are custom-processed in combinations for specific uses . . . keeping something in or keeping something out.

HPS produces functional materials for making:
BAGS • POUCHES • LINERS • OVERWRAPS • JACKETING
TUBES • SHEETING • RELEASES • BACKING • INSULATION
and many other protective applications

FIND OUT HOW

HPS Barrier Construction Experience can help solve your problems. Phone or write . . . no obligation.

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PROTECTIVE PACKAGING MATERIALS

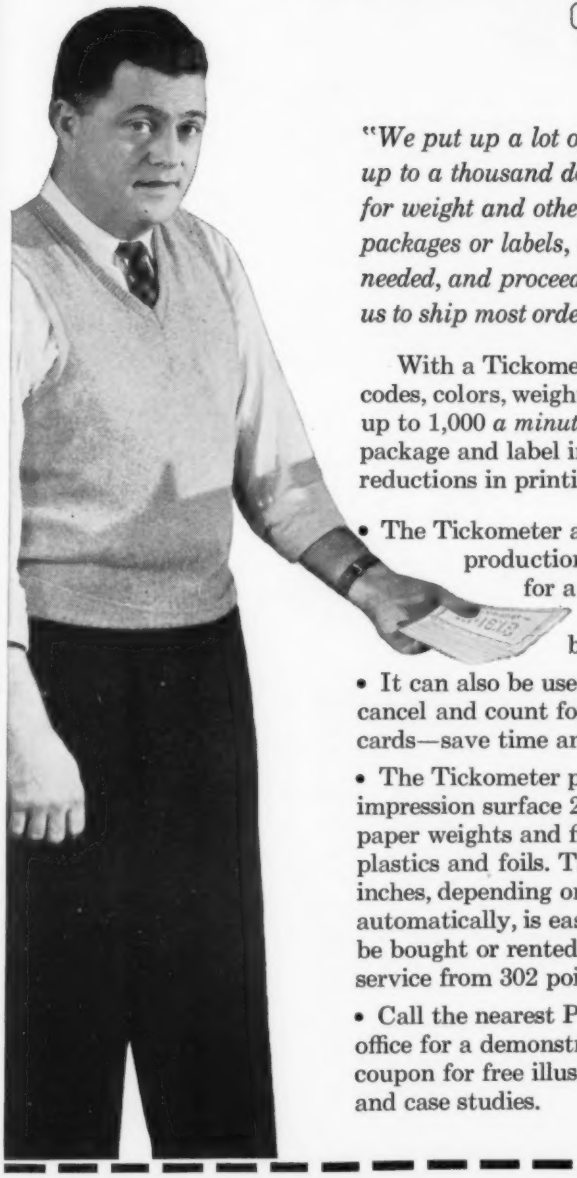
loss of $390,799 for the first nine months . . . **Crown Cork & Seal Co., Inc.**, reports nine months' earnings of $1,413,000. Its third quarter sales were $29,346,000, compared to 1957 third quarter sales of $28,588,000.

What people are doing:

J. Henry Richmond, Potdevin Machine Co., is the new president of Packaging Machinery Manufacturers Institute, Inc. . . . American Management Association has elected **Dr. Roger H. Lueck,** American Can Co., vice president in charge of AMA's research and development division . . . **Andrew L. Johnson** is now president and research director of the recently established Glass Container Industry Research Corp., a group comprising 17 U. S. manufacturers of glass containers . . . **Ralph F. George** is now acting general manager—Western area, of Diamond Gardner Corp.'s General Package-Foodtainer division . . . **Richard E. Reynolds** is now field sales manager for Avisco cellophane, a new position . . . Continental Can Co. has named **William H. Caddoo** general manager of its Gair Boxboard and Folding Carton division a vice president of the company . . . **Roland N. Ewens** is now chairman and chief executive officer of Milprint, Inc. New president of Milprint is **Arthur Snapper. William Heller, Sr.,** is now honorary chairman, continues in an advisory capacity . . . **Warren E. Townsend** is now advertising and sales promotion manager of Western Waxide Div. of Crown Zellerbach Corp. . . . **Thomas M. McCrary** is now vice president in charge of personnel, West Virginia Pulp & Paper Co., succeeding **James W. Towsen,** retired . . . Plax Corp. announces that **W. E. Gamron** is now sales manager, industrial and stock containers; **C. N. Sprankle,** product manager, sheet and formed containers, and **John W. French,** product manager, film . . . **George P. O'Brien** is now manager of can sales (middle Atlantic region) of Crown Cork & Seal Co., Inc. **Mark T. Concannon** is manager of closure sales for the same area . . . The Goodyear Tire & Rubber Co.'s packaging film sales department has transferred **W. R. Berkinshaw** to San Francisco, **D. L. Abshire** to Los Angeles, and **W. M. Story** to Los Angeles . . . New manager of packaging sales, Southern district, of the DuPont Co.'s film department is **Paul L. Frederick** . . . **James G. Jackson** is now sales manager of Chase Bag Co.'s St. Louis branch . . . **Eugene Melvin Tyndall** is now product sales manager at the Jackson, Miss., office of Knox Glass, Inc. . . . Owens-Illinois has named **Emmett P. (Pat) O'Rourke** manager of the Chicago sales branch of its glass container division, succeeding **Ebon C. Jones,** now Western regional sales manager of the company . . . **Thomas G. Lockwood** has joined the kraft paper sales department of West Virginia Pulp & Paper Co. . . . Continental Can Co. has named **W. J. Mutschler** general manager of production engineering of its metal division. **Roy B. Downey** is now manager of its Zanesville, Ohio, Hazel-Atlas Glass Div. plant. *(End)*

"Ship same day

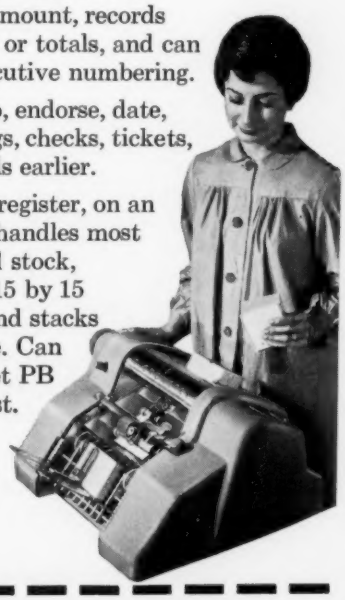
. . . thanks to convenient label-imprinting by Tickometer"



"We put up a lot of private brands, get orders from a half-gross up to a thousand dozen. Every item has to be coded or marked for weight and other factors. We draw from stock the small packages or labels, imprint code or weight for the exact quantity needed, and proceed to pack the orders . . . The Tickometer helps us to ship most orders the same day . . ." from an actual case study.

With a Tickometer, you can imprint packages and labels with codes, colors, weights, sizes, dates, lot numbers, etc.— at speeds up to 1,000 *a minute.* And avoid delay in filling orders, cut package and label inventories and waste, and show considerable reductions in printing bills.

- The Tickometer also counts accurately—gives you a check on production and shipments. It can be set for a predetermined amount, records partial amounts or totals, and can be used for consecutive numbering.
- It can also be used to mark, stamp, endorse, date, cancel and count forms, coupons, tags, checks, tickets, cards—save time and work, get totals earlier.
- The Tickometer prints with exact register, on an impression surface 2 3/16 by 7/8 inches, handles most paper weights and finishes, light card stock, plastics and foils. Takes sizes up to 15 by 15 inches, depending on model. Feeds and stacks automatically, is easy to run and use. Can be bought or rented. And you can get PB service from 302 points, coast to coast.
- Call the nearest Pitney-Bowes office for a demonstration. Or send coupon for free illustrated booklet and case studies.



Pitney-Bowes

TICKOMETER

Imprinting & Counting Machine

Made by the originator of the postage meter . . . offices in 107 cities in U.S. and Canada.

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7745 Walnut Street
Stamford, Conn.

Send free Tickometer booklet and case studies

Name _____

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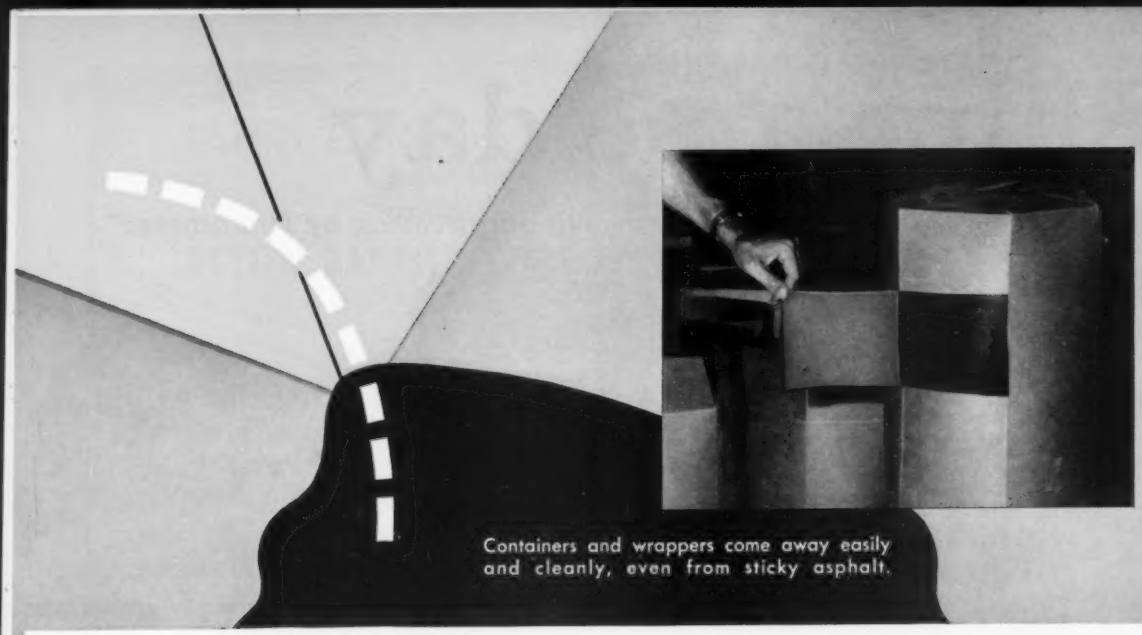

Containers and wrappers come away easily and cleanly, even from sticky asphalt.

Nothing Sticks to Paper

COATED WITH A SYL-OFF COATING†

If you store, handle or package sticky products, you and your customer can speed up production and processing, keep quality high, and save on shipping costs too, — by specifying paper coated with one of the new Syl-off* silicone paper coatings developed by Dow Corning.

Paper and paperboard, from glassine to boxboard, coated with Syl-off, have excellent anti-adhesive characteristics. Even the gummiest of materials . . . adhesives, asphalt, candy, glue, unvulcanized rubber . . . are easily, quickly, and cleanly removed from wrappers or interleaving sheets coated with Syl-off.

Applied to paper, a Syl-off coating does not alter the stock, will not migrate or transfer, and will not contaminate packaged products.

Applied one or two sides, depending on the proposed use, Syl-off coatings are effective, permanent, and economical. What's more they're lighter in weight than conventional release coatings, which means additional savings in shipping costs.

Investigate the use of paper coated with Syl-off. Write for free samples, full information and list of suppliers.

†We're sure there must be exceptions, but of the more than 100 materials tested to date, none has been found to stick — except a silicone adhesive.

DEPT. 5212

first in silicones

Dow Corning CORPORATION
MIDLAND, MICHIGAN

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*TM DOW CORNING CORPORATION

Top instants keep dry... fresh in Alcoa Wrap Packaging

Makers of today's fine powdered milks give their products *absolute protection* from moisture and damaging light. ALCOA® WRAP aluminum foil packaging seals top brands airtight, lightproof—supplies 100 per cent safeguard against activation and staleness.

Is bright ALCOA WRAP helping to spark sales? Well, just look at the best selling brands now using it. There's your proof.

Does your packaging need improving? ALCOA teams with America's top converters to assure you the best facilities, know-how and service—all along the line. For full information, call your local ALCOA salesman, or write: ALUMINUM COMPANY OF AMERICA, 1651-M Alcoa Building, Pittsburgh 19, Pennsylvania.

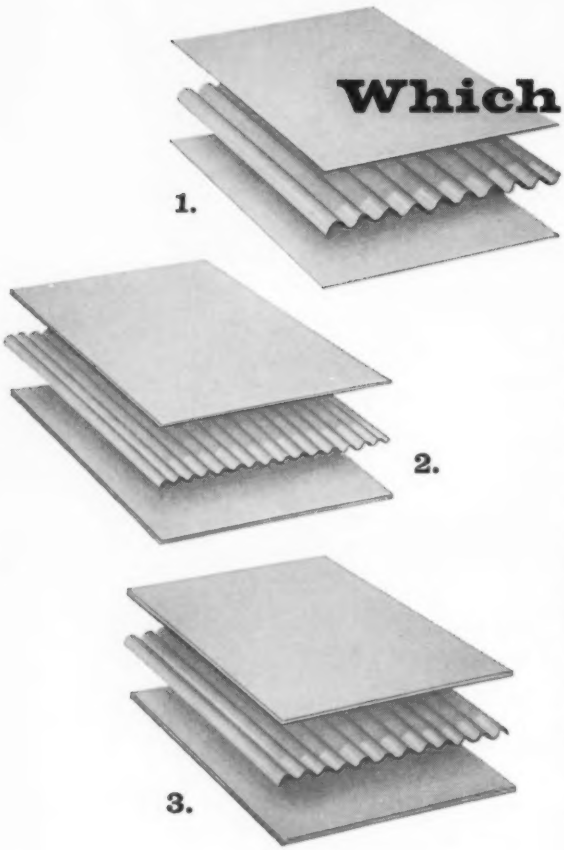
You're always ahead with Alcoa . . . greatest name in aluminum

AT YOUR GROCER'S NOW

ALCOA THEATRE
Fine Entertainment
Alternate Monday Evenings

What you should know about

Which combination for



1. "A"-flute board
2. "B"-flute board
3. "C"-flute board

Think of the "sandwich" of corrugated as the built-up layers of board that fold to form your shipping container.

In double-faced board, its most widely used form today, this "sandwich" consists of one sheet of corrugated medium glued between an outer and an inner liner. But there are many combinations depending on the degree of protection required. Different types of flutes ("A", "B" and "C"). Different weights or thicknesses of liners.

Which combination to pick depends primarily on your product. For example, how large is it? How heavy . . . durable? How is it normally shipped?

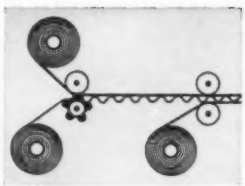
Union Box structural engineers will be glad to make such a product analysis for you and help plan your shipping container for greatest efficiency and economy.

Combining the board

The combination determined, rolls of corrugating medium and linerboard are placed on the corrugator. Here, steel "teeth" form the flutes, arching each one uniformly. The inner and outer facings are then applied.

combined board for Union Boxes

your corrugated box "sandwich"?



Board components

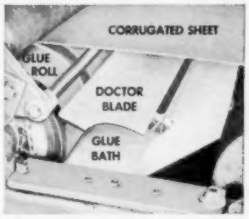
For extra-durable cushioning, Union's KEMKOR corrugating medium, made by the semichemical process, is normally specified. KEMKOR is a product of hardwood whose short, tough fibers combine remarkable rigidity with good load-bearing properties.

Making it stick

Adhering the inner and outer facings to the flutes are critical sheetmaking operations. *Pressures*, for example, must be sufficiently heavy to insure a durable permanent bond. Not so heavy as to crush and weaken the structure.

Then there's the *quantity* of adhesive used. Not enough results in a defective, prone-to-peel-apart sheet. Too much causes a "washboard" appearance and means that in order to achieve good printing some crushing of the flutes will occur. This crushing, while not always apparent to the eye, does reduce the overall strength of the box.

Even the amount of *heat* applied to the board can spell the difference between a strong "sandwich" and an unstable one. Adjusting heat to the *gel-characteristics* of the adhesive requires a fine balance. Too much heat prevents the glue from penetrating the board's fibers and causes a crystalline layer that breaks easily under stress. Insufficient heat allows the glue to "bite" but doesn't cook it enough to cause gellation and incomplete adhesion results. That's why it's essential that heat be accurately set for glue characteristics and machine speed as well as for the weight of board being run.



Glued for good

These controlled processes are typical of the detail that goes into every operation of Union Box manufacture. They save time and expense during handling, filling and loading. They provide the surest kind of protective insurance for your product and your overall shipping investment.

Write for new, informative booklet, "Manufacturing Sheets for Corrugated Boxes."

union camp®

UNION BOXES

UNION BAG-CAMP PAPER Corporation

233 BROADWAY, NEW YORK 7, N. Y.

Factories: *Savannah, Ga., Trenton, N. J., Chicago, Ill., Lakeland, Fla.*

Sales Offices: *Eastern Division—1400 E. State Street, Trenton, N.J.*
Southern Division—P.O. Box 570, Savannah, Ga.; P.O. Box 454, Lakeland, Fla.
Western Division—4545 W. Palmer, Chicago, Ill.

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A Standard made Castlizer?
A Custom made Castlizer?
Or can your present equipment be used more efficiently?

It is not the type of equipment that is important. The important consideration is the overall sterilization process that best fits your needs.

To help you select the right type of equipment for your sterilization program, Castle engineers will recommend the proper steam, dry heat, or gas Castlizer Pilot Plant for your research lab. Then determine for yourself the most efficient sterilizing method.

Castle Engineered Sterilization is programmed to help you in all your sterilization problems. You will profit by the 75 years of Castle research and experience in the application of all known media of sterilization.

Send for this FREE Brochure

Shows how CES helps solve your sterilization problems. Presents latest developments in dry heat, steam and GAS.

STERILIZATION MOLDED TO YOUR NEEDS

NEW: **Now CES makes gas available for terminal sterilization. This process enables gas to penetrate and sterilize the contents of sealed packages. The CES brochure supplies complete details on the economic use of gas sterilization.**

WILMOT CASTLE COMPANY

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Castlizer

For more information circle No. 216 on Card

IT'S TRUE!

...you can save many ways with

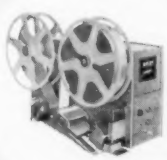
AVERY LABELS

Whether you identify anything from abalone steaks to zithers, these Avery pressure-sensitive Labels contribute uncommon efficiency. Here a very few of Avery's case histories reveal how diverse firms economize with these *versatile* self-adhesive labels. In the office, on the assembly line or at point-of-purchase – it's always true – you *can* save many ways with Avery Labels!

IN THE CHIPS—Meadow Gold Products Co. finds Avery Labels fine for indicating ice cream flavors. By using these time-saving labels to identify everything from chocolate chip to rum raisin, the Brooklyn firm minimizes the need for big inventories of preprinted boxes . . . and aids handling operations by providing identification at a glance.

FITS THE PATTERN—Fine Melamine dinnerware produced by the Boonton Molding Company is distinguished by self-adhesive Avery labels bearing the Boontonware trademark. Applied at the rate of 3000 to 5000 per hour, these labels also carry the pattern name to aid selection at the consumer level. Easily applied, these distinctive, tight-gripping labels play a neat role in Boontonware's overall sales appeal.

COOKING WITH GAS—Relying on decals to identify a new Propane Cook Stove and Lantern required **four** full-time operators . . . and created a bottleneck for the Otto Bernz Company of Rochester. When an experiment revealed the unusual gripping ability of Avery labels, they were adopted readily. Following the changeover, **one operator** was able to handle the entire process . . . smoothly.



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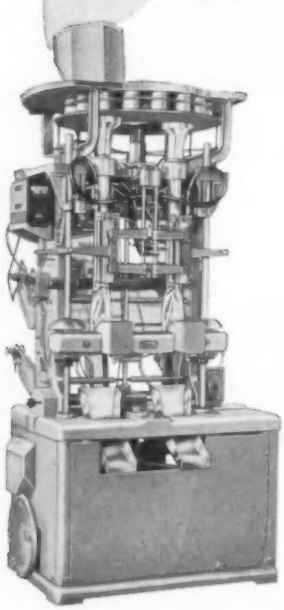

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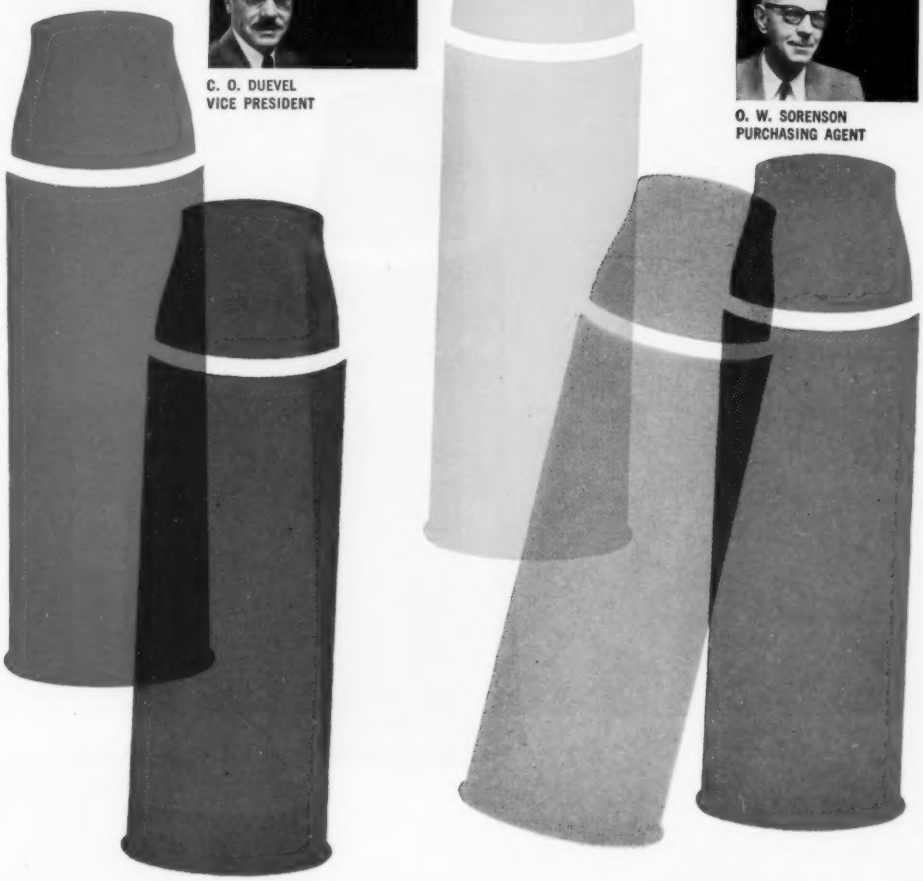

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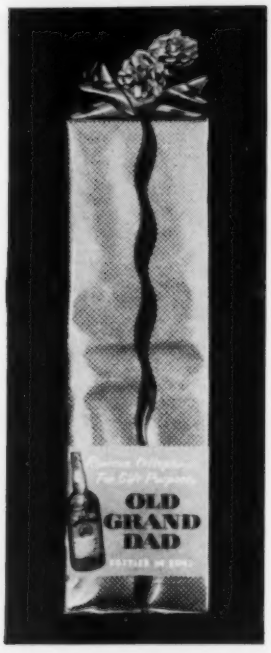

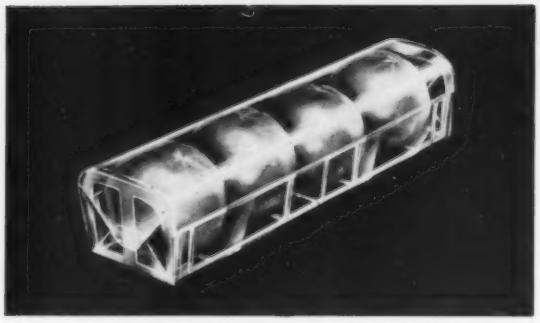

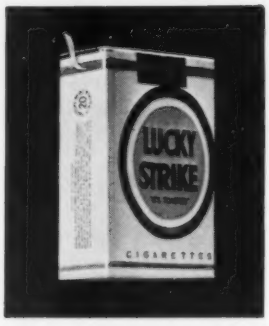

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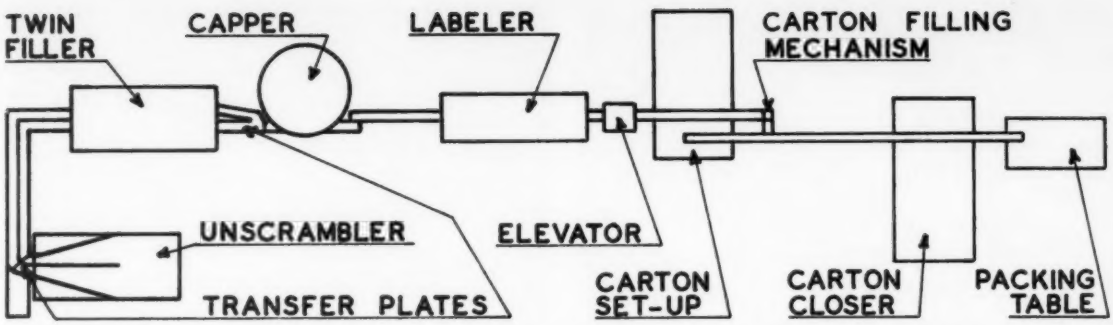

Fig. 1. Packaging line is normal straight-type except for unscrambler which forms a "U" to allow one operator to handle four machines efficiently.

Practical pointers to packaging line efficiency

By Sam E. Noble,
Vice President for Production, The Chattanooga Medicine Co., Chattanooga, Tennessee

Special home-built unscrambler feeds two columns of jars to twin-type filler.
Simple device changes twin column back to single file to feed capper.
Uses gravity and power of existing equipment for transferring jars from one machine to another and for inserting jars into cartons. Has quick changeover features.

By developing means of feeding jars two abreast to a twin filler and changing them back to single file for capping, labeling, and so on, we solved one of the problems in setting up our new Sōltice Quick Rub packaging line. The operation was simplified by our building a special unscrambler to feed the "twin" conveyor.

Also, equipment was developed and built to transfer the jars from one machine to the next—sometimes by utilizing power from one of the machines itself, other times by gravity. Simple equipment for inserting the jars into the cartons was constructed. This operates by power from the carton set-up machine.

Two package sizes. The decision was made to package two sizes of our new product—1½ and 3¾ oz. The package to be used for each: A wide-mouth jar with an aluminum Roll-on cap, packed in a reverse tuck carton. Two sizes determined that the line had to be adjustable. By some simple arrangements of guide rails, etc., we are able to change over from one size to the other with a minimum of effort and in a very short time.

On hand we had an Elgin twin filler which runs at a total discharge rate of 60 jars/min. (30 from each head) for the small size; 45 jars/min. for the larger. A Burt labeler on hand was of ample capacity to handle the discharge from the filler. With capping and cartoning equipment for setting up and closing the cartons, the line

Sam E. Noble studied engineering at the University of Tennessee. He joined Chattanooga Medicine in 1922 as assistant superintendent and became successively superintendent, production manager, and finally vice president. Prior to this, he was with J. L. Newkirk Company and International Portland Cement Company. Active in the assembling of K-Rations during World War II, Mr. Noble worked closely with the Quartermaster Corps in developing a small individual carton used in the rations. He is a director of the Packaging Institute.

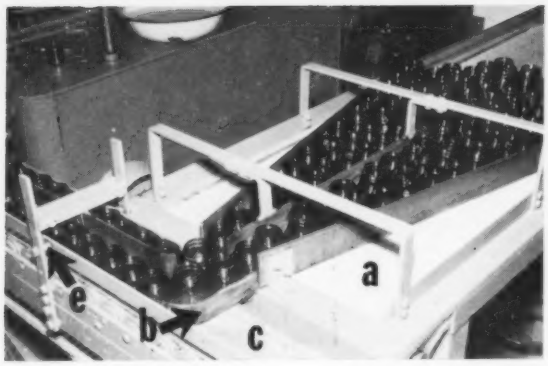

Fig. 2. Home-built unscrambler lines up jars; discharges two columns.

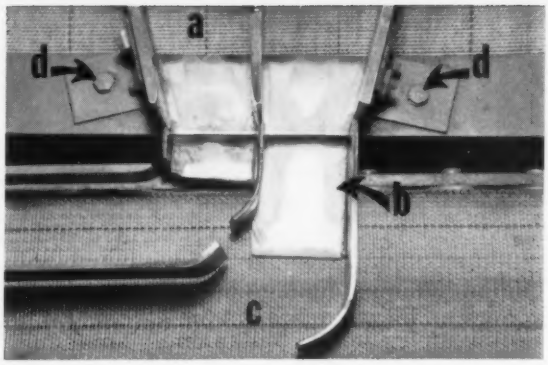

Fig. 3. One-piece transfer plate (b) quickly changed for larger jars.

was complete except for the unscrambler and the means of transferring from one machine to the next.

Four Machines Require One Operator

We laid out the line as shown in Fig. 1. It is a normal straight-type layout except for the position of the unscrambler which forms a "U" with the rest of the line. We used this arrangement, not because of a shortage of floor space, but to allow one girl to handle the unscrambler, filler, capper, and labeler efficiently.

The latter three machines require very little attention, but someone must be on hand in case of a stoppage. If we had placed the unscrambler at the end of the filler in straight-line form, there would have been too great a distance between machines for one girl to handle the entire job.

Unscrambler Supplies Two Columns

The unscrambler (Figs. 2 and 3) is constructed of angle iron and is the same height as the conveyor chain of the filler. The endless canvas belt (a) carries the jars to the head of the unscrambler. A stationary center guide divides the jars into two groups, each on one-half of the belt.

The outer guides, placed on an angle to form a wedge effect, funnel the jars of each group into single file, ready for discharge from the unscrambler. No jams occur when the jars collect in the smaller part of the "wedge," as a vibrator, placed under the canvas belt, keeps them shaking gently.

A transfer plate (b) carries the two columns of jars from the unscrambler to another conveyor belt (c) which, in turn, carries the jars to the intake end of the filler conveyor chain. Note that this plate is in one piece. (See Fig. 3.) It contains its own guides which maintain two columns of jars and turn them onto the next belt.

Change transfer plate quickly. The plate shown is for the small sized jar. Secured to the frame of the unscrambler by two machine screws (not visible), it is easily and quickly removed and replaced by another plate identical to this one except large enough to accommodate the large sized jar.

Also, the discharge end of each of the outer guides is anchored to the unscrambler frame by one bolt (d). At this point on the frame, there is a pair of tapped holes for each guide. They are spaced so that the two inner holes (where bolts are shown in Fig. 3) are located properly for the small sized jars; the two outer holes (not visible) for the large sized. Thus, no measuring and adjusting are in-

Fig. 6. Jars are turned on their sides and roll by gravity to labeler.

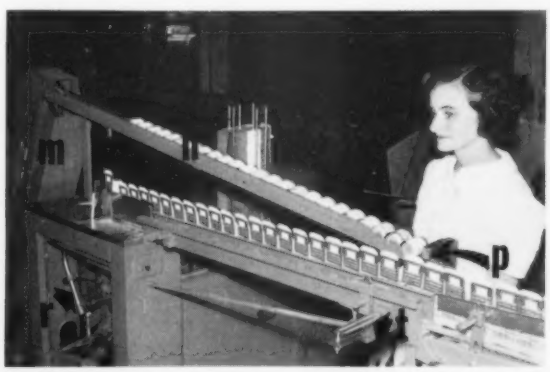

Fig. 7. Elevator (m) raises jars which roll to cartoning device (p).

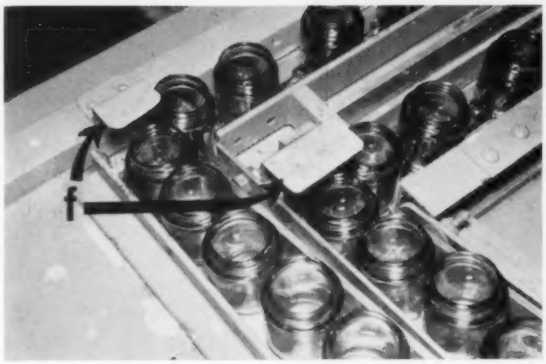

Fig. 4. Top guides (f) prevent jars' popping up from between guides.

Fig. 5. One-piece transfer plate (g) changes jars back to one column.

volved, as with a "slot," when changing the line over.

Use spacers on guides. Of the three guide rails on the conveyor which carries the jars from the unscrambler to the filler, the center rail is stationary. The two outer ones are adjustable for changeovers. Here again, the outer rails are quickly changed to accommodate the large jar by removing the spacer nuts (e).

As the jars are being transferred (Fig. 4) to the intake conveyor chain of the filler, they have a tendency to tilt forward and pop up from between the guides. This is due to the slight, positive horizontal force on the jars, created by the feed conveyor belt to assure a constant supply to the filler. A top guide (f) on each column prevents this from occurring and causing stoppages. Should there be no jar, for one reason or another, in a pocket of the filler, a Micro Switch (not visible) stops the machine.

Changes Back To Single Column

Discharged from the filler two abreast (Fig. 5), the jars are changed back to one column by a special transfer plate (g) as they enter upon the single conveyor chain of the Alcoa capper. Note that the plate is in one piece and consists of two troughs of different lengths—one holds three small jars, the other five. Thus, the lead jar on the longer side is several inches ahead of the lead one on the shorter side.

As the next pair of jars is discharged from the filler, each one pushes its respective column one jar forward. The two lead jars enter upon the conveyor chain simultaneously, but due to the spacing, there is no jamming. The jars do not even touch one another.

Plates interchangeable. Again, for quick changeovers, this plate is held in place by three bolts, one of which (h) is visible. Another plate, identical in size except that the troughs are wider, is inserted for the large sized jars. For these larger jars, the troughs hold two and four jars. Note the piece of wire secured to bolt (h). This acts as a spring and assures that the lead jar in the longer trough passes on to the conveyor chain properly.

Feed To Labeler By Gravity

Upon leaving the capper, the jars are turned onto their sides (Fig. 6) for feeding into the labeler. An angle attachment (j) extending about 5 in. beyond the end of the capper conveyor chain catches the bottom edge of one side of the jar, causing it to tilt.

A wire guide (k) assures a smooth and positive transfer of the jar from the conveyor chain to the

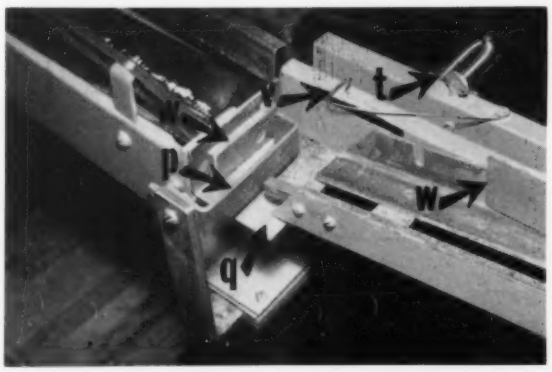

Fig. 8. Cartoning device (p) is actuated by carton set-up machine.

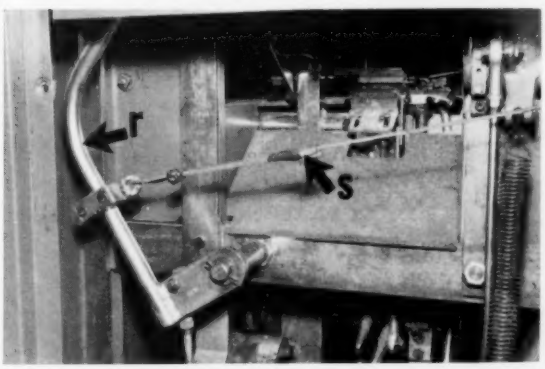

Fig. 9. Arm back stroke (r) pulls cable (s) actuating plunger device.

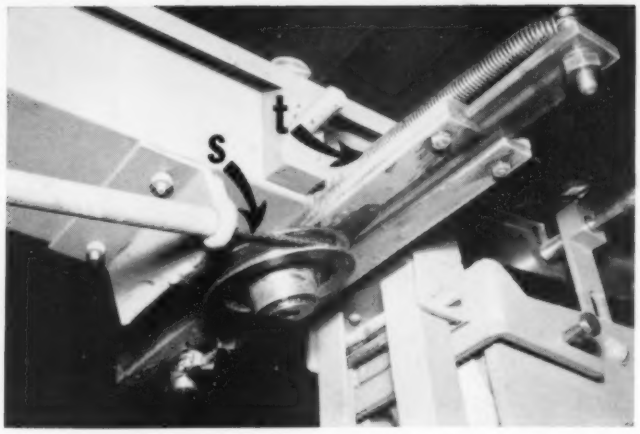

Fig. 10. *(left)* Plunger mechanism (p) pushes jar from platform; jar drops into carton.
Fig. 11. *(above)* Tension on springs (t) re-sets the plunger ready to insert the next jar.

inclined trough. Immediately, the jar rolls by gravity down the trough to the intake end of the labeler which is positioned approximately 12 in. lower than the capper conveyor.

Elevator uses labeler power. Raising the jars from the discharge end of the labeler to the intake of the cartoning equipment (Fig. 7) is accomplished by a home-built elevator (m). Power from the labeler is utilized to operate the elevator. Thus, we saved the cost of an additional power unit; also, we have no problem concerning timing in removing the jars from the labeler.

Home-Built Cartoning Device

As the jars leave the elevator, still lying on their sides, they enter another inclined trough (n) and roll by gravity to the mechanism which inserts them into the cartons. This home-built device is simple, but requires perfect timing. This is accomplished by utilizing power from the conventional Bivans carton set-up equipment.

Has plunger and platform. The mechanism (Figs. 7, 8, 9, 10, and 11) consists of a plunger (p) and a small platform (q) at the bottom of the inclined trough. When an empty carton is positioned properly at the edge of the platform, the plunger pushes the jar off the platform. It then drops by gravity into the carton (Fig. 10). Each stroke of the plunger is actuated by the intermittent motion of the carton machine pusher which pushes the set-up empty cartons along the conveyor.

Let's backtrack a little. After the cartoner sets up the empty carton and tucks the bottom flap, it places the carton onto its discharge conveyor. Immediately, a pusher, actuated by an arm (r), pushes the empty carton exactly one carton width. In turn, the entire column moves the width of one carton. This occurs during the *forward stroke* of the arm. It is interesting to note here that we made this conveyor of a specific length so that the carton to be filled would be lined up perfectly at the filling platform. This length was calculated so that it suffices for either size carton.

Back stroke inserts jars. The back stroke of the arm returns the carton pusher to its initial position ready to pick up the next newly set-up carton. At the same time, since the arm (r) is connected directly to the plunger (p) by a wire cable (s), the *back stroke* motion energizes the plunger which inserts the jar into its carton. In Fig. 9, the arm has just completed its back stroke and moved the plunger to its forward position (Figs. 8, 10, and 11), which pushed the jar off the platform. Fig. 11 shows the under side of the plunger mechanism with the plunger in its forward position.

Springs return plunger. While the arm (r) is in its forward stroke, the wire cable tends to slacken. This allows the plunger (p) to be forced backward by the tension of the springs (t). Thus, the plunger is ready to insert the next jar which rolls in place immediately.

Provides braking effect. Note the spring wire guide (v) which has a two-fold purpose. It holds the carton close to the platform during filling. Also, as the entire column of cartons is pushed forward with an intermittent motion, it provides a braking effect on the cartons. This prevents the lead carton from "bounding" forward beyond the filling platform.

Another quick changeover feature is the use of spacers (Figs. 8 and 10). Note spacer bars (w) which are held in place by machine bolts. Here again, it is a matter of removing these bars and the equipment is automatically ready to receive the larger jars.

From our automatic cartoning machine, the filled cartons move on to a conventional carton closer and are packed by hand into shipping containers. Between the carton filling and closing stations, paper inserts are placed in the cartons after the jars.

(*Continued on Page 79*)

A practical approach to a weight-control program

Analysis of test data, and setting the control limits for the average and the range. Determining system to be used, and establishing average overfill and present allowable underweights.

By John E. Reynolds,
Industrial Engineer,
The Tool Steel Gear and Pinion Company,
Elmwood Place, Ohio

In Part I of this article, we reviewed the problems involved and discussed the need of a weight-control program. We outlined the necessary essentials for the testing of machine accuracy, and the procedure for sampling and testing filling equipment. Now we are ready to analyze our test data preparatory to establishing control limits.

ANALYSIS OF TEST DATA

After the data has been assembled, it must be calculated and analyzed to establish the accuracies attainable in the machine. Since two methods of testing have been described, the methods of calculating the accuracy, or variation, will be different in each case, although the results will be practically the same.

Group Sampling Calculations

During the regular testing period, the increment average ($\overline{X}$) and range (R) for each sample group are computed. (See Fig. 1.*)

The next steps in the calculations are:

1. **Determine the average of all the group averages.** This gives the grand average ($\overline{\overline{X}}$) of the entire test on one filler head. Thus, in Fig. 1, $\overline{\overline{X}} = 10.0 \div 20 = 0.50$.

2. **Determine the average of all the group ranges.** This gives the average range ($\overline{R}$) of the entire test on one filler head. Thus, in Fig. 1, $\overline{R} = 49 \div 20 = 2.45$.

*(*Editor's note: Figs. 1, 2, and 3 are found in Part I of this article which appeared in last month's issue.*)

In this type of sampling, the range should not have been affected by any change of average during production.

Accuracy calculations. The average range ($\overline{R}$) is used to calculate the accuracy of the machine. The formula for this variation is

$$\sigma' = \frac{\overline{R}}{d_2} \qquad (1)$$

where σ' is an accuracy figure such that $\overline{\overline{X}} \pm 3\ \sigma'$ will include 99.7 per cent of all packages produced, assuming the curve produced approaches normal. The value of d_2 varies with the number of samples in each group, and can be found in any statistical quality control book. A listing of d_2 values for different sample sizes is shown in Table I for convenience.

Thus, the accuracy of the machine tested by the group plan in Fig. 1 is (using Equation 1)

$$\sigma' = \frac{2.45}{2.33} = 1.05 \qquad (2)$$

where 2.33 is the d_2 value for five samples in a group.

In testing a machine with multiple heads which are gang adjusted, care was taken to list the samples from each head separately. The weights are now totaled and averaged for each head. (See Fig. 2) These averages are then compared to one another to determine if the heads are alike. This can be done visually or by plotting the averages on a chart. **If the heads are not alike, they must be corrected before any weight-control system is put into effect.** In Fig. 2, note that the average of head *B* obviously is not like the other seven (it is extremely lower) and must be corrected.

In a like manner, any tare

With the filling equipment sampled and tested, the test data must be analyzed to establish the accuracies in the machine. In this second part of a three-part article, Mr. Reynolds provides illustrations and all of the necessary equations to make this analysis, to establish average overfill and allowable underweights, and set the control limits. The third part, which will appear in our next issue, deals with the weight-control system as a whole, its installation, and a general discussion in which he suggests solutions to some of the questions and problems raised in the first two parts of the article.

TABLE I
Factors For Computing Control Chart Limits

No. of Samples in Group	Value			
	d_2	A_2	D_3	D_4
2	1.13	1.88	0	3.27
3	1.69	1.02	0	2.58
4	2.06	0.73	0	2.28
5	2.33	0.58	0	2.12
6	2.53	0.48	0	2.00
7	2.70	0.42	0.08	1.92
8	2.85	0.37	0.14	1.86
9	2.97	0.34	0.18	1.82
10	3.08	0.31	0.22	1.78
11	3.17	0.29	0.26	1.74
12	3.26	0.27	0.28	1.72
13	3.34	0.25	0.31	1.69
14	3.42	0.24	0.33	1.67
15	3.47	0.22	0.35	1.65
16	3.53	0.21	0.36	1.64
17	3.59	0.20	0.38	1.62
18	3.64	0.19	0.39	1.61
19	3.69	0.19	0.40	1.60
20	3.74	0.18	0.41	1.59
21	3.78	0.17	0.43	1.58
22	3.82	0.17	0.43	1.57
23	3.86	0.16	0.44	1.56
24	3.90	0.16	0.45	1.55
25	3.93	0.15	0.46	1.54

weights taken are analyzed. **It can readily be seen that if there is a variation of tare weight and a variation of finished weight, then the variation in finished weight must be a combination of variations of both the tare and the fill weights.** Experience has shown that there will always be a tare and a fill variation if a small enough increment is used to find it, but in some cases the tare variation will be small enough to be ignored for control purposes.

To find the variation in fill weight after the tare variation and the finished variation are known, the formula used is

$$\sigma'_f = \sqrt{\sigma'^2_{fw} + \sigma'^2_t}$$

where σ'_f is the variation in finished weights; σ'_{fw} is the variation in fill weights; and σ'_t is the variation in tare weights.

Solving for the variation in fill weights, σ'_{fw}, we have

$$\sigma'^2_f = \sigma'^2_{fw} + \sigma'^2_t$$

or

$$\sigma'^2_{fw} = \sigma'^2_f - \sigma'^2_t .$$

Then

$$\sigma'_{fw} = \sqrt{\sigma'^2_f - \sigma'^2_t} . \qquad (3)$$

With the use of Equation 3, the individual variations in finished weight, tare weight, and fill weight are known. This formula is very valuable for items which cannot be removed from their containers easily, such as peanut butter. For such products, the tare-weight and finished-weight variations can easily be found through weighing, and the fill-weight variation then determined by calculation using the formula in Equation 3.

In general, **if the variation in the tare weights is less than half the variation in the fill, an average tare weight can be used for control purposes, and the variation of the finished weight used to calculate the control limits.**

If the variation in tare weights is greater than half the variation of the fill, steps should be taken to eliminate the tare weight from the testing. If it is found that the tare weight cannot be eliminated, then some system must be set up ahead of the filling operation to keep a continuous check on the average and the accuracy of the tare weights. This is discussed more fully later under "general discussion." With this done, the weight controls can be predicated on the fill variation rather than on the total variations.

TABLE II
Per cent Value of Z

Per cent	Value of Z
0	3.00
5	1.64
10	1.28
15	1.04
20	0.84
25	0.67
30	0.52
35	0.39
40	0.25
45	0.13
50	0.00

Note: In calculating for a per cent underweight (—) all the values for Z will be minus (—).

Random Distribution Sampling Calculations

During the regular testing period, a distribution curve was built up from the values of the samples taken. (See Fig. 3) This data must now be analyzed and calculated. Note in Fig. 3 that there are four columns headed, *n*, *d*, *nd*, and nd^2. In the *n* column, the *number of samples* that fell into each increment category (shown at far right of chart) is listed. Under *d* (distribution), opposite its counterpart in the *n* column, is listed the *value* for each increment category. The value of *nd* is the product of n and *d;* likewise, nd^2 is the product of *nd* and *d*.

Each of these columns, with the exception of *d* is totaled (Σ). Then the grand average $\bar{\bar{X}}$ is calculated

$$\bar{\bar{X}} = \frac{\Sigma nd}{\Sigma n} = \frac{50}{100} = 0.5 . \qquad (4)$$

The variation of the machine is calculated by the formula

$$\sigma' = \sqrt{\frac{\Sigma nd^2}{\Sigma n} - \left(\frac{\Sigma nd}{\Sigma n}\right)^2} . \qquad (5)$$

Here again, the σ' is the accuracy figure. Applying the values from Fig. 3 to Equation 5, we have

$$\sigma' = \sqrt{\frac{156}{100} - \left(\frac{50}{100}\right)^2}$$

$$= \sqrt{1.56 - 0.25} = 1.14 .$$

In the same manner, the tare weights are calculated. **By comparing the tare distribution with the finished distribution, it will be quite obvious in some cases that the tare-weight variation will have little or no effect on the finished-weight variation.** In such instances, the variation of the tare weights

need not be determined, but the average weight is needed to calculate the true fill weight.

DETERMINING THE SYSTEM TO BE USED

Equipment

At the same time as setting up the weight-control system to be used, a determination must be made of the equipment needed. From the test data, the proper measuring increment has been determined, and a scale measuring in these increments must be secured.

In conditions where the tare-weight variation is an important factor, an effort must be made to eliminate it. This can be accomplished by means of pre-weighted containers, or blank containers which have been pre-balanced and can be used over and over again.

If these measures are not possible, then a system of weighing empty containers must be set up to maintain a continuous check on the tare weights. If this is not done and controls are set up on the basis of the finished weight alone, an appreciable amount of product will be given away to compensate for the tare variation. (See last section on "general discussion").

Sample Size

Each sample group should consist of five consecutive samples unless there is a good reason for using another quantity. It should never be less than two, since the check on the machine variation is lost with only one sample per group.

Reasons for changing sample size might be:

1. A filler with other than five pockets and only one central adjustment (gang adjusted). In this case, the sample size should be the same as the number of pockets.

2. A filler on which the sampling frequency must be fairly rapid. Here the sample size could conceivably be only two.

3. A filler from which samples are difficult to obtain, or are obtained too slowly. Here again it may be only two.

4. A filler with multiple adjustable filler heads, in which the identity of the sample becomes lost before it can be weighed. In this case it should be at least as large as the number of filler heads.

5. A filler with so many individually adjusted heads that the person sampling does not have enough time to take five samples from each head. Again, it may be as low as two from each head.

Sampling Frequency

The frequency with which any given production line is to be sampled will depend on the following factors:

1. How often the average weight changes. Several days of continuous testing will reveal weight-average changes in terms of time interval. The frequency of sampling then will be designated as nearly as possible to take place just after these changes.

2. Availability of personnel. If the personnel designated to do the sampling are available only at a certain time, the sampling has to be done then. However, it would be better if the personnel were made available at the times sampling is required.

3. Sample size. If a sample size is five and the production rate is only five packages per hour, obviously the line can not be tested oftener than once an hour. Using a constant sampling size of five, a production line need not be sampled oftener than 5 per cent of its production, unless other factors such as rate of average change in time warrants it.

In cases where the sample size is reduced to two or three because of slow production, these two factors will balance each other. In some cases where the sample size is reduced because of difficulties in handling, it would be well to increase the sampling frequency.

4. Machine accuracy. This factor relates to the ability of a machine to hold its average at a given weight. The longer the weights remain constant, the less frequently the line needs to be sampled.

5. A percentage sampling plan. If a certain percentage of the production is required to be sampled, the frequency will depend upon the production rates.

Sampling at intervals of one-half hour normally proves to be satisfactory. This may be varied to compensate for unusual circumstances.

Establishing Average Overfill And Present Allowable Underweights

After the sample size and sampling frequency have been established, the next step is to determine the conrol limits to be used for controlling the filling operation. At this point, we have established the accuracy (σ') of the filler under most conditions. With this knowledge, and **before the control limits can be established, it is necessary to decide upon the percentage of allowable underweight packages.** (See last section on "general discussion").

With this percentage figure established, and the accuracy of the fillers known, it is possible to calculate the amount of average overfill ($\bar{X}'$) necessary to maintain the desired percentage of underweight packages. The formula for finding this overfill is

$$Z = \frac{X - \bar{X}'}{\sigma'} \qquad (6)$$

where Z is a figure taken from a typical table of **cumulative probabilities of the normal probability distribution** (areas under the normal curve from $-\infty$ to Z). This figure is dependent upon the per cent desired from $-\infty$ to Z. See Table II for Z values; X is any point on the normal curve of machine accuracy; $\bar{X}'$ is the process average overfill (the unknown being sought); σ' is the weighing accuracy of the process, already established.

Example. The declared weight on a package is 6 oz. (X). The filling machine accuracy is 0.15 oz. (σ'), and it has been decided that the allowable number of underweight packages will be limited to 25 per cent. What is the average overfill necessary to maintain this percentage of underweight packages?

Referring to Table II, the value of Z is -0.67 for 25 per cent (minus since the 25 per cent will be underweight, or below the zero point). Thus, applying Equation 6, we have

$$-0.67 = \frac{6 - \bar{X}'}{0.15}.$$

Then

$$-0.67 \cdot 0.15 = 6 - \bar{X}'$$

$$-0.1005 = 6 - \bar{X}'$$

$$\bar{X}' = 6 + 0.1005 = 6.1 \text{ oz.}$$

Thus, if the average overfill is 6.1 oz., the process will have 25 per cent of the packages produced underweight.

Another use of this formula (Equation 6) is to find what per

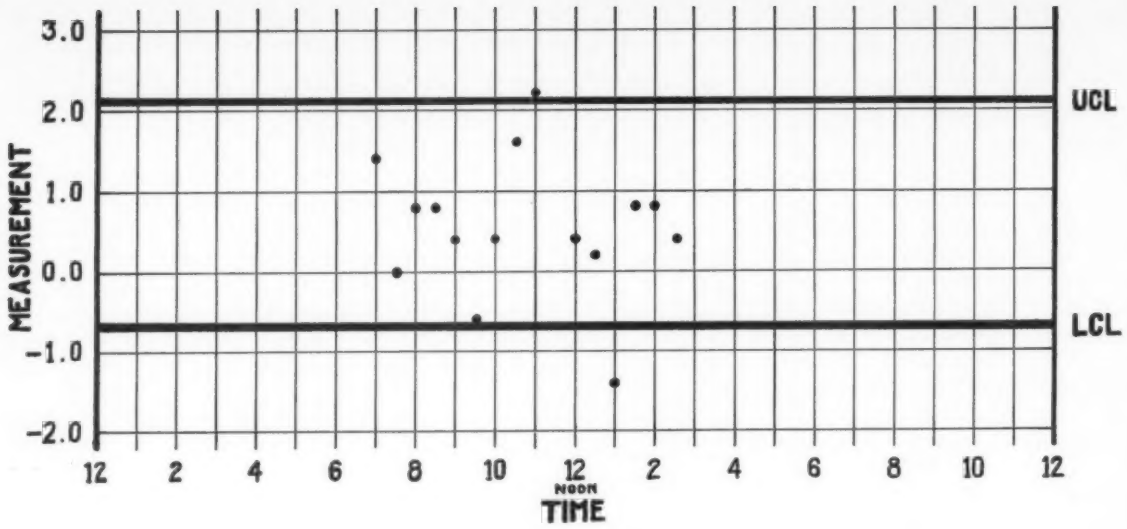

Fig. 4. Average chart of measurements recorded on record sheet, Fig. 6. Upper (UCL) and lower (LCL) control limits, as established by Equations 14 and 15, are 2.12 and —0.70 respectively. Note measurements at 11:00 a.m. and 1:00 p.m. are outside control limits. After each was recorded, an adjustment to scale was made (see Fig. 6). When averages fall within control limits, process is running as desired. But when they fall outside either limit, something is wrong and corrective measures must be taken. This chart shows *variability over a given period of time.*

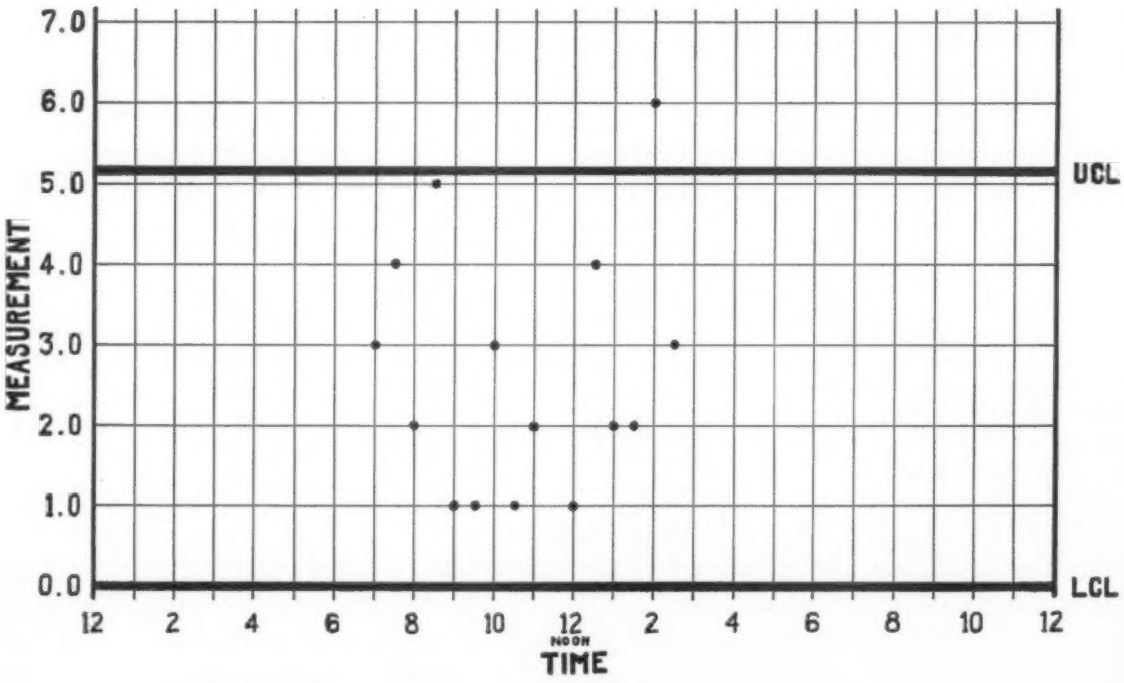

Fig. 5. Range chart of measurements recorded on record sheet, Fig. 6. Upper (UCL) and lower (LCL) control limits, as established by Equations 18 and 19, are 5.19 and 0.0 respectively. Note range at 2:00 p.m. was so great as to fall outside UCL, and action was taken to correct this (see Fig. 6). This chart shows variability at time of sampling—that is, *variability between each item in sample*—whereas average chart shows variability over period of time. To have true over-all picture of process, it is necessary to look at both charts together.

cent of the samples fall below a certain figure with a given average and a given accuracy.

Example. In a package with a declared weight of 6 oz. (X), a process average of 6.25 oz. ($\bar{X}'$), and a machine accuracy figure of 0.15 oz. (σ'), what per cent of the packages will be underweight?

Applying these values to Equation 6, we have

$$Z = \frac{6 - 6.25}{0.15} = \frac{-0.25}{0.15} = -1.67.$$

Referring again to Table II, −1.67 shows that 4.75 per cent, or about 5 per cent, of all packages produced will be below 6 oz. under these conditions.

One caution must be introduced at this point: Assume a system were set up in this manner (the 25 per cent underweight example above), and the number of underweight packages were counted at the end of a day's run. The total counted would be perhaps from 10 to 15 per cent of the total number of samples taken. This is due to a **peculiarity of recording** wherein, if the scale is being read to 1/8 oz. only, any weights that fall between 1/16 oz. above, and 1/16 oz. below, zero are counted as "zero", or exact weights. Our formula above (Equation 6) calculates from exact zero.

Therefore, it is obvious that there will be some packages counted as exact weights when they are actually slightly underweight. This can be compensated for by using 6 oz. −1/16 oz., or 5.9375 oz., as the value of X instead of 6 oz. It will give 25 per cent below the −1/16-oz. weight. At the same time, however, it will also give about 37 per cent below the absolute zero.

Now that we have the formula (Equation 6) for establishing an average desired overfill, we can determine this value for the machine tested in Fig. 1. We will assume that a decision has been made to maintain 25 per cent allowable underweight packages counting from absolute zero.

This 25 per cent will give us (from Table II) a Z value of −0.67. The value of X will be 0. The accuracy, σ', was calculated previously to be 1.05 (Equation 2). By applying these values to Equation 6, we have

$$-0.67 = \frac{0 - \bar{X}'}{1.05}.$$

Solving for $\bar{X}'$,

$$-0.67 \cdot 1.05 = 0 - \bar{X}'$$

$$-0.71 = -\bar{X}'$$

$$\bar{X}' = 0.71. \qquad (7)$$

Here, 0.71 is the average overfill necessary to maintain 25 per cent of the packages underweight.

It should be emphasized at this point that these calculations are made in terms of whole numbers. The calculations in Fig. 1 are in terms of 1/32 oz. Therefore, the σ' of 1.05 is actually 1.05/32 oz., or 0.033 oz., and the resulting overfill, $\bar{X}'$, is 0.71/32 oz., or 0.022 oz.

Should it be desired to have 37 per cent below absolute zero or 25 per cent minus values at the end of a production run, the X value will be −0.50, or 1/2 of 1/32 oz. under the declared weight. These figures would give an $\bar{X}'$ value of 0.21 instead of 0.71. The −0.50 is minus since we are calculating the per cent underweight from half of a graduation, or 0.5/32 oz. underweight.

The declared weight, 1 lb. or whatever it might be, is considered as 0 since it will be cancelled out by the scale setting.

Product: Coffee — Size: 1-lb. bags

Measurements recorded in 1/32 oz. over or under (−) 1 lb. — Machine No.: 1 — Scale No.: 1 — Shift: 1 st. — Date: 7/28/58

Series	Time	Measurements in each of 5 items A	B	C	D	E	$\bar{X}$ Average	R Range	Comments
1	7:00	1	0	1	2	3	1.4	3	
2	7:30	0	−1	−2	1	2	0.0	4	
3	8:00	0	0	1	2	1	0.8	2	
4	8:30	−2	0	2	3	1	0.8	5	
5	9:00	0	0	1	1	0	0.4	1	
6	9:30	−1	−1	0	−1	0	−0.6	1	
7	10:00	2	0	1	0	−1	0.4	3	
8	10:30	2	1	1	2	2	1.6	1	
9	11:00	2	1	3	2	3	2.2	2	Adjust 1 turn down
10	12:00	1	0	0	1	0	0.4	1	
11	12:30	2	0	−1	−2	2	0.2	4	
12	1:00	0	−1	−2	−2	−2	−1.4	2	Adjust 1 turn up
13	1:30	0	0	1	2	1	0.8	2	
14	2:00	−3	2	0	3	2	0.8	6	Shake out scale
15	2:30	−1	1	0	0	2	0.4	3	
						Total:	8.2	40.0	15 pkgs. underweight
						Average:	0.55	2.67	out of 75 pkgs. weighed equals 20% underweight

$\bar{\bar{X}} =$ 0.55 $\quad \bar{R} =$ 2.67 $\quad A_2\bar{R} = 0.58 \times 2.67 =$ 1.55 .

$D_3\bar{R} = 0.$

$D_4\bar{R} = 2.12 \times 2.67 =$ 5.66 .

Fig. 6. Record sheet for $\bar{X}$ (average) and R (range) charts. Data was obtained from one individually controlled filling head during actual production for which an established weight-control system was in use. The average and range of each series is shown plotted on their respective charts, Figs. 4 and 5, to give graphic picture of how process is operating.

Control Limits For The Average

With the necessary average overfill established, the next step is to set the control limits. **Since the increment average of a group of samples,** rather than the individual sample increments, **will be plotted on a chart,** (see Fig. 4) **controls must be established on the averages of the samples.** The formula used to calculate the distribution of the averages is

$$\sigma_n' = \frac{\sigma'}{\sqrt{n}} \qquad (8)$$

where n is the sample size (number of samples per group), and σ' is the accuracy of the sample averages.

This accuracy can now be determined for the test in Fig. 1. Since five samples per group were used, the value of n is 5; the accuracy,

σ', is 1.05 from Equation 2. Substituting these values in Equation 8, we have

$$\sigma_{\bar{x}}' = \frac{1.05}{\sqrt{5}} = 0.47 \qquad (9)$$

where 0.47 is the accuracy of the sample averages.

Usually the control limits used are equal to the desired average ± 3 times the accuracy of the sample averages, or more simply,

Upper control limit

$$(\text{UCL}) = \bar{\bar{X}} + 3\sigma_{\bar{x}}' \qquad (10)$$

and

Lower control limit

$$(\text{LCL}) = \bar{\bar{X}} - 3\sigma_{\bar{x}}' \qquad (11)$$

where $\bar{\bar{X}}$ is the desired average, and $\sigma'_{\bar{x}}$ is the accuracy of the sample averages (Equation 8). The control limits will include 99.7 per cent of all the averages produced. These limits can be set to include a smaller percentage if tighter controls are desired. This is done by deciding upon the percentage desired, finding the Z value, (Table II) and substituting it for the numeral 3 in Equations 10 and 11 above.

For example, should you desire to have 90 per cent within the limits and 10 per cent outside, this would mean 5 per cent outside each limit (upper and lower). In Table II, 5 per cent is opposite a Z value of 1.64. Therefore, the formulas for the upper and lower control limits would be, respectively,

$$\text{UCL} = \bar{\bar{X}} + 1.64\sigma_{\bar{x}}'$$

and

$$\text{LCL} = \bar{\bar{X}} - 1.64\sigma_{\bar{x}}'$$

A shorter method for determining the control limits consists of using the formulas

$$\text{UCL} = \bar{\bar{X}} + A_2\bar{R} \qquad (12)$$

and

$$\text{LCL} = \bar{\bar{X}} - A_2\bar{R} \qquad (13)$$

where $\bar{\bar{X}}$ is the desired average, $\bar{R}$ is the average range, and A_2 is a number that varies with sample size. This variable can usually be found in the same table as the d_2 figures previously discussed. For convenience, a listing of A_2 values is shown in Table I.

We can now calculate the control limits for the average of the machine tested in Fig. 1. In Equation 7, we determined the desired process average overfill ($\bar{X}'$) for this machine to be 0.71. Since $\bar{X}'$ is the *ultimate* average for a process, it can be determined only by 100 per cent inspection—checking every package. Since we used a limited sampling plan to obtain the process average, $\bar{\bar{X}}$, we can, and must, substitute the value of $\bar{X}'$ for $\bar{\bar{X}}$. Therefore, 0.71 becomes the value of $\bar{\bar{X}}$ in the computations below. $\sigma_{\bar{x}}'$ is 0.47 (Equation 9). Applying these values to Equations 10 and 11, we have, respectively,

$$\text{UCL} = 0.71 + (3 \times 0.47) = 2.12 \qquad (14)$$

and

$$\text{LCL} = 0.71 - (3 \times 0.47) = -0.70 \qquad (15)$$

By the shorter method, we first determine the value of A_2 to be 0.58 for five samples in a group. (Table I) The average range, $\bar{R}$, is shown in Fig. 1 and is 2.45; $\bar{\bar{X}}$, the desired average, is 0.71 (as used in Equations 14 and 15). By applying Equations 12 and 13, we have, respectively,

$$\text{UCL} = 0.71 + (0.58 \times 2.45) = 2.13$$

and

$$\text{LCL} = 0.71 - (0.58 \times 2.45) = -0.71$$

It should be noted that either of these methods for calculating the control limits for the average gives accurate results. We now draw these limits on the "average chart," (see Fig. 4) that is, the UCL as 2.12, and the LCL as –0.70 (Equations 14 and 15 respectively).

Control Limits For The Range

Similar to the average, the range is posted to a control chart, Fig. 5, which must contain control limits. These limits for the range are calculated by the formulas

$$\text{UCL} = D_4\bar{R} \qquad (16)$$

and

$$\text{LCL} = D_3\bar{R} \qquad (17)$$

where $\bar{R}$ is the average range, and D_3 and D_4 are numbers that vary with sample size. These variables can usually be found in the same tables as the A_2 and d_2 values previously discussed. For convenience they are listed in Table I. If it were possible that the average range, ($\bar{R}$), was unknown, it can be calculated by solving Equation 1 for $\bar{R}$; thus, $\bar{R} = \sigma' d_2$.

Now let us calculate the control limits for the range of the machine tested in Fig. 1. The average range, $\bar{R}$, is 2.45 (from Fig. 1); referring to Table I, the value of D_3 is 0, and D_4 is 2.12–for five samples in a group. Thus, applying Equations 16 and 17, we have, respectively,

$$\text{UCL} = 2.12 \times 2.45 = 5.19 \qquad (18)$$

and

$$\text{LCL} = 0 \times 2.45 = 0. \qquad (19)$$

These limits are now drawn on the "range chart" as shown in Fig. 5; that is, the UCL as 5.19, and the LCL as 0. (Equations 18 and 19 respectively).

Standardization Of Control Limits And Other Factors

Almost every department has different sized products, if not different products. **Controls can extend to all these different sizes and/or types of product.** Previous testing will establish the accuracy on all the items. **It is well to standardize the control limits as far as possible in each department.**

In determining the system, those factors which were found acceptable during the testing period in the areas of Weighing Increments, Unit to be Tested, Scale Setting, etc., will be acceptable when setting up the weight-control program.

The third and final part of Mr. Reynolds' article will appear in our January, 1959, issue. Complimentary copies of the first and second parts of the article are now available upon request, as long as our supply lasts.

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Robert F. Dale received his B. S. degree in chemical engineering from the University of Wisconsin. Presently director of the research engineering laboratory of the Red Star Yeast and Products Company, he has been active in all phases of package development, including methods of producing and testing inert-gas-atmosphere packages. Previously, he was with the United States Rubber Company as an industrial engineer in its foam rubber division, and as a process engineer in its synthetic rubber division. He is the corporate representative of his company in Packaging Institute and a member of American Chemical Society.

Inspire your workers to produce effective packages

By Robert F. Dale,
Director,
Research Engineering Laboratory,
Production and Research Departments,
Red Star Yeast and Products Company,
Milwaukee

In this day of calling for higher speeds, are we sacrificing the quality of the package? According to Mr. Dale, quality can be maintained without significant sacrifice in production volume—not by specifications alone, but in addition, by instilling in the work force the need for quality and productivity, with major emphasis on quality. He sets forth a ten-point approach to the problem, which has resulted in his company's obtaining packages that meet its quality requirements, increasing production rates, and reducing scrap losses.

Have you ever tried to produce a quality product without first thoroughly indoctrinating the operators and inspectors on the need for quality instead of quantity? In our opinion, this would be similar to trying to produce a custom-made car in a plant geared for high-volume, assembly-line operations. The results would be far from those desired. We have found that optimum performance of our packaging operation occurs only when the entire work force is properly oriented and instructed in the need for quality and the need for productivity, with major emphasis being placed on quality.

Our product, active dry yeast, must be packaged in a nitrogen atmosphere, and the package must be able to resist the transfer of either water vapor or oxygen for upwards of two years. One of the converter salesmen who calls on our company called our package the "Cadillac" of the packaging field, and we think he properly named it.

Spec's, Tests We Use

The specifications and acceptance tests that are required to permit us to produce this package are shown below:

1. **Maximum allowable water-vapor transmission** rate of package stock: 0.0003 gm/100 sq. in/24 hr.

2. **Maximum allowable oxygen transmission** rate of package stock: 0.0045 cc/100 sq. in/24 hr.

3. **Laminated stock-acceptance tests:**

a. Yield per unit weight.

b. Adequate aluminum foil-Pliofilm bond strength.

1. "As received".

2. After 3 months' storage.

c. Absence of residual solvent in finished lamination.

d. The proper paper type to minimize yellowing on exposure to light and atmospheric conditions.

e. The absence of delamination characteristics after package formation and exposure.

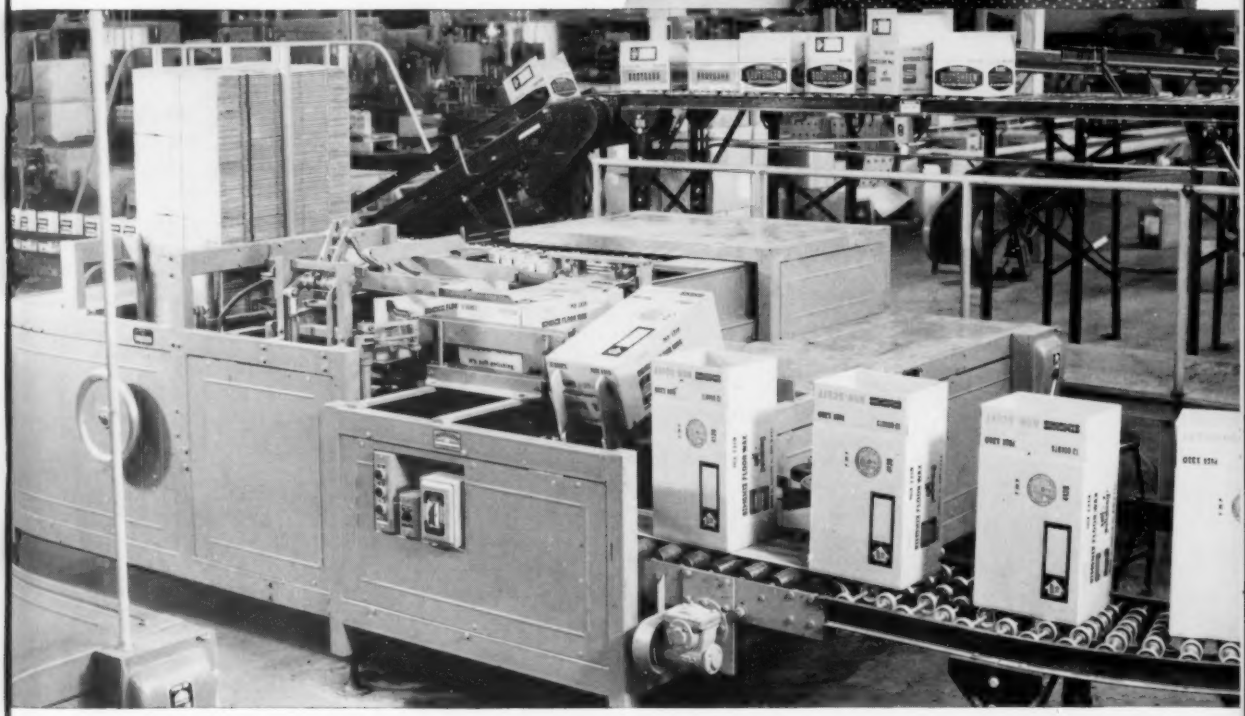
f. The ability to produce acceptable seal strength as measured by the Suter tensile tester on finished packages.

(Turn Page)

For more information circle No. 228 on Card

Simoniz
puts "protection"
in a can

Packomatic®
puts the cans in a case



Packomatic equipment feeds, forms, positions, loads, seals and imprints corrugated shipping containers automatically. However you ship—in multi-ply paper bags, or in corrugated shipping containers; whatever you "package"—a can, a carton, a box or a bale—there's a Packomatic machine designed to handle your shipping container requirements. Packomatic machines, geared to your production line, will feed, form, position, load, seal and imprint corrugated containers automatically—or do any of these operations singly as a complement to your existing packaging facilities. Let one of our sales engineers suggest the start of a long-range packaging program for your plant. Investigate the Packomatic method of cutting costs and boosting production. Call, write or wire today.

Fully-automatic Packomatic Case Former-Loader, part of a fully-automated production line at the Simoniz plant, Kankakee, Illinois. Other Packomatics on the Simoniz line include Case Sealers and Case Imprinters.

Begin to automate your packaging line with this high-speed, fully-automatic Case Sealer. Aligns loaded cases, positions flaps, glues, seals and discharges — and no operator needed! Available in wide range of sizes. Semi-automatic, too. Call or write for additional information.

J. L. FERGUSON CO. Joliet 1, Illinois

PACKOMATICS include the Bale Sealer • Case Sealers • Opener-Loaders • Case Imprinters • Telescoping Volumetric Fillers • Packer-Gluers • Semi-automatic or fully-automatic.

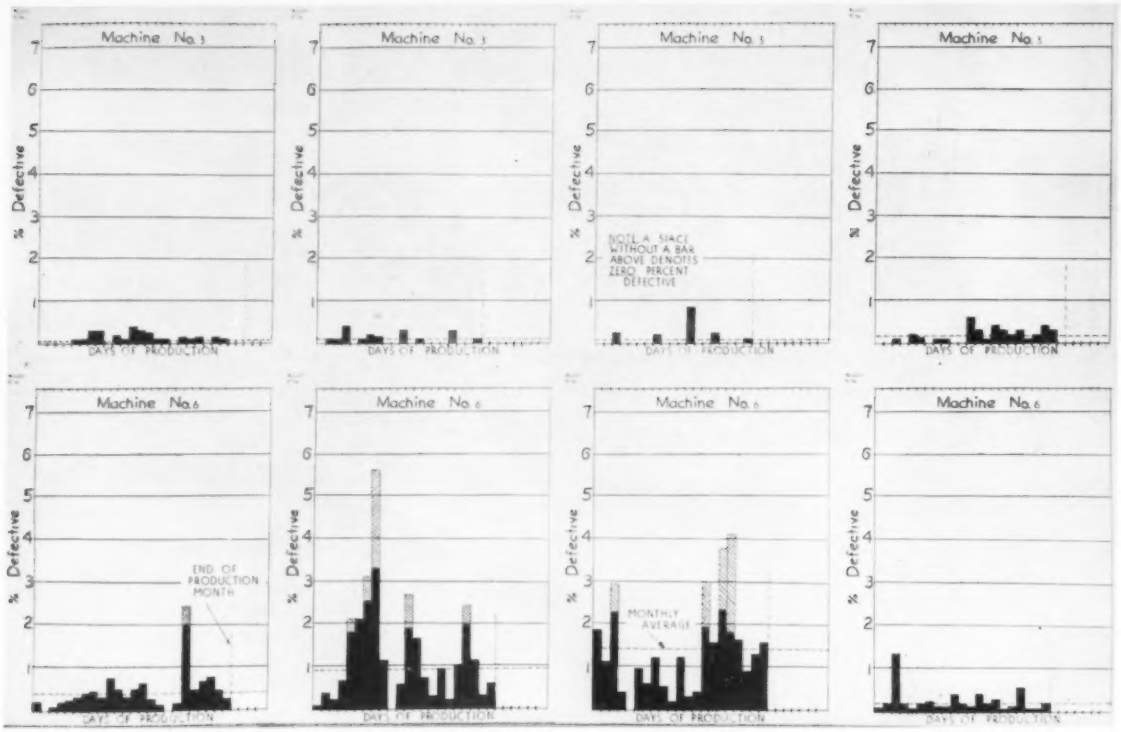


Fig. 1. Two series of graphs showing daily per cent of defective packages as produced by two packaging machines. Not only does this type of record help the operators visualize machine performance, but it also aids the detection of a machine which needs repairs. Upper series follows performance of machine which has been in good control over a four-month period. First three graphs of lower series follow a machine needing repair; fourth graph shows same machine after repairs were made.

g. The resistance of the finished package to in-transit shock damage.

4. **Production acceptance standards** for the finished package:

a. The internal package must contain 1.0 per cent or less oxygen after closure. (*1, 2*)

b. Less than 1.0 per cent of the produced packages will contain points of leakage. (*3*)

c. The seal of the produced package must have a bond in excess of a predetermined minimum value.

It is quite apparent after reading through these acceptance standards and specifications that the normal production urge and incentive for quantity cannot control the output if the desired high quality package is to be marketed. Our company has found that it is possible to maintain quality without a significant sacrifice in production volume by following a ten-point approach.

10 Points To Package Quality

This approach is not unique to our operation and could be applied to any packaging department that requires a quality package. The points and their explanatory discussion are as follows:

Point 1: Inspect. Constantly check on the quality of production by statistically sound inspection procedures. A practical plan to permit us to maintain the production acceptance standards for the finished package was found to require destructive testing of a minimum of 4 per cent of all production, and the acceptance, or rejection of the packages on a shipping case basis (800 to 2,000 packages per case, depending upon the size of the package being produced.

A plan of this sort requires the production of each machine to be packaged in separate cases. To simplify the sampling, 8 packages are withdrawn from each 200 produced. These packages are tested for frequency of leaks, oxygen content, and/or seal strength (all destructive tests).

Point 2: Reject. The quality inspectors are given absolute authority to accept or reject each production unit. They are also given authority to shut down any packaging machine until it is producing acceptable quality packages. This places a large responsibility on the inspector. However, with well-defined acceptance specifications and a properly written operating manual, they have little doubt as to what should be done with any questionable unit.

If management is permitted to select the person for any specific

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Plastiatrics in packaging

DOW'S CLINICAL APPROACH TO HEALTHY PLASTICS APPLICATION

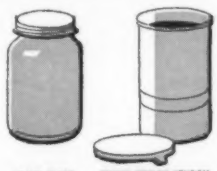
STRUCTURAL PROPERTIES...FREEDOM OF DESIGN...ECONOMY BEHIND THE BIG SWITCH TO STYRON PLASTIC CONTAINERS

As every package engineer knows, today's package has many jobs to do. It must underscore its protective qualities with fresh sales appeal plus long range performance and economies. More and more package engineers have found that plastics in general offer unlimited possibilities for solving these new packaging problems . . . and that Styron® in particular offers significant advantages in all-important areas.

IN STRUCTURAL PROPERTIES

Styron is tailor-made to meet the needs of most packing applications. It is rigid, strong, lightweight, break resistant . . . and is available in ten formulations to cover specific packaging requirements.

IN FREEDOM OF DESIGN



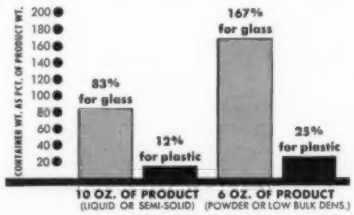
PLAIN GLASS "HIGH STYLE" STYRON

Styron not only takes the limits off package design, but increases production rates as well. With Styron you can achieve outstanding new styling concepts which have never been feasible or practical with glass.

IN EXCLUSIVE ECONOMIES

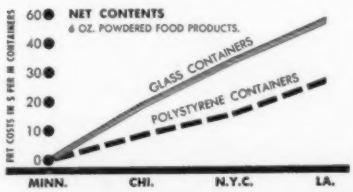
Because Styron is both lightweight and strong, it offers important savings unobtainable with glass. A Styron plastic container weighs only a fraction of its counterpart in glass, but it will still reduce breakage to a minimum. This means substantial savings in shipping costs, makes lighter shipping cartons practical. Consider these examples:

A preserve manufacturer on the East Coast spends nearly a third of his shipping costs for containers when he ships



a 10-oz. *glass* of jelly cross-country. Add to this the heavy shipper required plus breakage potential! A lightweight Styron plastic container can reduce both shipping costs and hold breakage to a minimum.

Pickles, olives and relishes requiring a glass container weighing as much or more than the 10-oz. contents could be shipped safely in Styron plastic containers a fraction of their weight.



In packaging a low-bulk-density powdered product, the weight of a glass container would be at least half again as much as the contents. Here, too, lightweight Styron can put shipping costs in their proper perspective.

Styron plastic offers the package engineer outstanding advantages in material, in design, in economy . . . yet its price is competitive with conventional glass in most applications. Let Dow packaging engineers help you make the most of Styron in solving modern packaging problems. Get in touch with the Dow man in your area, or write to THE DOW CHEMICAL COMPANY, Plastics Packaging Service 1567N, Midland, Michigan.

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GENERAL PURPOSE
STYRON ®666
STYRON 689 (Easy Flow)

MEDIUM IMPACT
STYRON 330 (Easy Flow—Translucent)
STYRON 777

HIGH IMPACT
STYRON 475
STYRON 440 (Heat Resistant)
STYRON 440M (Easy Flow)
STYRON 480 (Extra-High Impact)

HEAT RESISTANT
STYRON 683
STYRON 700

YOU CAN DEPEND ON Dow

job, the quality inspector should be a conscientious, reliable person who will follow instructions. He should have sufficient intelligence to spot an abnormal condition and advise the supervisor of this condition.

Point 3: Reduce scrap. Strive, through adequate supervision, to minimize scrap losses and maintain high production rates. Unfortunately it is almost impossible to spell out how this can be accomplished. It requires a high degree of skill in human relations and diplomacy, and in the selection of the right person as supervisor to accomplish the desired results.

Point 4: Develop pride. Try to instill a feeling of pride and accomplishment in the operators and inspectors by displaying graphs and figures of daily machine performance, both as to quality and quantity. A record of this sort not only helps the operators visualize their performance, it also helps the supervisor detect a machine that needs repair or revision.

Fig. 1 shows the quality graphs on two of our packaging machines. The upper series of graphs follows the performance of a machine which has been in good control over a four-month period. The first three graphs of the lower series follow a machine which needed repair; the fourth shows the same machine after the repairs were made. The solid section of the bar represents the defective level which would be in control, based on the quantity produced and the normal expected performance. The cross-hatched section represents the degree of quality *out of control* on any given day.

The data shown on these graphs represents only the *"as produced"* quality of the machine. Quality control examination of the package will improve the production sufficiently, through rejections, so that the average shipped quality will be less than 1.0 per cent faulty packages.

Point 5: Study operation. Be alert to better production quality through careful study of machinery performance and through machinery modifications. This can best be done by making a detailed study of the 10 to 20 (or even more) machine variables which either independently, or in combination, will influence the package quality.

A partial list of these variables for our machines is given below:

1. Seal temperature.
2. Sealing pressure.
3. Dwell time.
4. Production rate.
5. Type of sealing jaws.
6. Uniformity of temperature across the sealing surface.
7. Uniformity of temperature at any given spot on the sealing surface.
8. Method of material - draw through the machine.
9. Shape and location of filling tube.
10. The type of cutting knives and the distortion that occurs at the point of cutting, etc.

In our operation, an investigation of points 1, 6 and 7 resulted in a 1 to 2 per cent reduction in scrap loss, an increase in production through reduced downtime, and an improvement in "as produced" package quality.

Point 6: Cross-check. Periodically, on a non-scheduled basis, have production samples withdrawn and inspected by a non-production team. This sort of inspection has a two-fold purpose. First, it assures Thus the operators and inspectors are doing a satisfactory job; second, it is a cross-check on the testing apparatus.

Point 7: Refuse low-standard jobs. Refuse to accept packaging jobs which would necessitate the lowering of acceptance standards. Thus the operators and inspectors would not feel that if inferior quality was good enough for customer "A", it is also good enough for customers "B", "C", & "D".

Point 8: Maintain machines. Establish a routine daily cleaning schedule and a preventive maintenance schedule for each packaging machine.

Point 9: Protect shipments. Place the finished package in the shipping case in such a fashion that it will receive a minimum of in-transit damage. Our experience has shown that in-transit damage may double, triple, and sometimes quadruple the frequency of faulty packages.

Therefore, if a customer requires a package quality comparable to the "as produced" machine quality in your plant, special precaution must be taken. The most practical solution we have found is to palletize the cases, cover with a protective corrugated sleeve, and ship as a palletized unit. This shipping method virtually eliminates in-transit damage.

Point 10: Strive to improve package materials. Continually work with the converters to obtain package stock which will improve on the quality of the package.

Make preliminary evaluations of new packaging materials to determine if their protective properties are an improvement. Then conduct small production runs and storage tests to see if the finished package out-performs your present one.

Examination of these ten points makes it obvious that the production of an economical, quality package can not be obtained by merely writing rigid acceptance specifications. Instead, it is essential to write the required specifications and then develop the right philosophy and/or attitude toward the task in the supervisors, machine operators, inspectors, and machine mechanics. The approach outlined above will pay dividends by increasing production rates, reducing scrap losses, and increasing the quality of the outgoing package; and promote continuation of a well-informed, cooperative and contented work group.

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2. Dale, R. F., "Simplified Micro-Gas Analysis," *Modern Packaging*, 30 (1957), No. 11 (July).
3. Dale, R. F., "Test Method for Pouches," *Modern Packaging*, 29 (1956), No. 9 (May).

(End)

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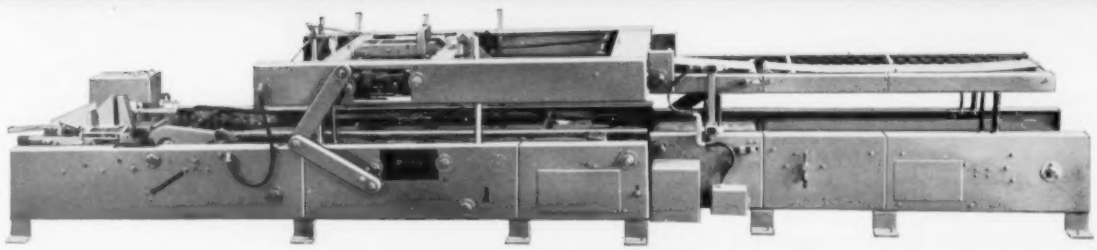
Easily removable glue pots and rollers . . . identical glue pots and rollers for upper and lower application . . . no leakage of glue onto product . . . adjustable to a wide range of case sizes . . . speed up to 30 cases a minute . . . these are just some of the operational advantages of the redesigned Standard-Knapp Case Gluer & Sealer that will reduce your case closing costs. *Make sure you have complete specifications. Write for our bulletin.*



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MANUFACTURING COMPANY
STANDARD-KNAPP DIVISION
PORTLAND, CONNECTICUT

U.S.I. POLYETHYLENE NEWS

A series for plastics and packaging executives by the makers of PETROTHENE® polyethylene resins

Packaging Notes

Colorful striped polyethylene film makes possible unique package creations. Produced from U.S.I. PETROTHENE resins by a midwest extruder, the film is competitive with printed striped film in price. Unlike printed film, the film with extruded stripes looks equally attractive on both sides. The color will not rub or wear off.

Polyethylene film — with extruded-in stripes that won't rub or wear off — is equally attractive on either side and can be obtained in a raised or embossed effect to provide a rich feel.

The film is produced generally as a clear film with stripes of any single color. It is also possible to produce two different color stripes, or to construct a die to produce alternating stripes on a clear background, or even to obtain a three color effect. Translucency or transparency of the colors can be varied as desired. A raised or embossed effect is also possible. The film is made with standard extruders which have been modified considerably to make possible the fusing of two or three different color streams within the die.

The film is produced as tubing in production thicknesses ranging from 1.25 to 10 mils. It is expected to be used for novelty packaging of candy, cosmetics, stationery, some soft goods, toys, cotton balls and other drug items, and certain foods.

Transfer labeling of poly squeeze bottles is being done at savings of 75% in printing costs by means of a new direct thermal transfer method. The transfer labels are printed on a kraft paper carrier. Heat and pressure applied by a special machine transfers the legend to the squeeze bottle.

The method is said to combine the attractiveness and durability of preprinting with the versatility and economy of labeling. The transfer unit can be mounted on any standard wrapping, bundling or bagmaking machine.

New machine forms and heat-seals polyethylene-coated blanks to produce cartons and trays which are highly resistant to grease and moisture without the need for liners. The machine operates at speeds up to 180 or more units per minute. It is designed for packaging cookies, crackers, fig bars, confections, frozen foods, cosmetics, cigarettes, vegetables and other products.

Comprehensive Guide to Polyethylene Processing Completed by U.S.I.; Copies Now Available

100-Page Guide Covers Molding, Extrusion and other Problems

U.S.I. has just released a useful, comprehensive booklet on polyethylene processing. The 100-page booklet "PETROTHENE® Polyethylene . . . A Processing Guide"—is based to a large extent on research carried out by U.S.I.'s scientific staff and on experience gathered by its technical service engineers.

Abundantly illustrated, the booklet stresses practical shop information throughout, with only as much basic scientific theory as is needed to make the practical material readily understandable. The booklet discusses polyethylene properties, routine quality control tests and the various techniques for processing polyethylene—film and profile extrusion, extrusion-coating of paper and other substrates, wire and cable coating, injection molding, bottle blowing, thermoforming and others, along with related subjects such as heat sealing and film printing.

The booklet is filled with pages of invaluable shop advice for all types of processors. Many paragraphs are devoted to such specific problems as the causes and prevention of wrinkles in blown film, factors affecting the quality and economics of heat sealing, the machine conditions and resin properties which result in minimum "neck-in" and beading in paper coating and the effect of resin type and mold characteristics on cycle time or warpage.

"PETROTHENE® Polyethylene . . . A Processing Guide" is now available free to processors and convertors. For your copy, write to Editor, U.S.I. Polyethylene News, U. S. Industrial Chemicals Co., 99 Park Ave., New York 16, N. Y.

Poly-Coated Corrugated Board Now in Commercial Production

Poly-coated corrugated board is now available for the first time. The problem of high temperatures on the corrugator has been avoided by extrusion-coating the liner board at the mill level and using a cold adhesive for corrugating.

Photo courtesy Mead Board Sales Co.

Corrugating line on which polyethylene-coated corrugated board is now being produced.

Among the applications for corrugated poly-coated containers are:

Bulk shipment of meat, where moisture and grease-proof interiors reduce weight loss of the meat and eliminate loss of container strength through moisture pickup;

Shipment of furniture and other hard goods, where abrasion damage from the container has been a problem;

Bulk bakery and confectionary shipments, where absence of grease-wickage makes containers suitable for reuse or use as point-of-sale displays;

And in concrete construction forms, with the poly coating acting as a release agent.

Tests Show Many Aromatics Can Be Packaged In Poly

A two-year study has shown that a large class of essential oils can be packaged in polyethylene containers with little or no permeability loss.

In this group were such aromatics as Oil Bois de Rose; Oil Cassia Rectified; Oil Citronella Java; Oil Coconut Edible, N. F.; Oil Geranium Algerian; Oil Lignaloe Wood, Mexican; Oil Vertivert Bourbon; Oil Patchouly Penang; Oil Sesame U.S.P.; Oil Ylang Ylang; and Oil Almond Sweet expressed U.S.P.

Cleveland OK's Plastic Pipe

The city of Cleveland has amended its building code to permit the use of plastic pipe for street-to-house water service lines. The decision was made after plastic pipe easily passed rigorous pressure, temperature and torsion tests.

Plastic pipe is considered ideal for street-to-house water lines, which do not involve high pressure or extreme temperatures. It costs half as much as copper tubing and costs less to install.

Air Flow Problems?

U.S.I. Technical Service has a portable air velometer capable of measuring up to 10,000 feet per minute. If you have a problem that might involve air flow, indicate this with your request for technical service so the U.S.I. engineer can have the instrument available when he calls.

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How to locate optimum placement of cushioning for liquids in glass containers

After completing the series of tests reported in Parts I and II, it became apparent that the principal problem of cushioning whiskey bottles was not that of protecting the bottles from breakage from blows and shocks originating outside the case. Surprisingly, the real problem proved to be that of protecting the interior bottles from striking each other. The discovery of the economic optimum of cushioning and its placement has reduced packaging costs (and damage claims) each year.

By Allyn C. Beardsell,
President,
and Jerome J. Kipnees,
Assistant to the President,
Container Laboratories, Inc.
New York, N. Y.

PART III: *How to find the optimum cost of cushioning*

The first two articles in this three-part series summarized the extensive testing performed by our organization on packaging for twelve 4/5-quart bottles of whiskey. This concluding article deals with the analysis of the data and the ultimate selection factors we considered in preparing our recommendations.

Each element of packaging was carefully studied to achieve the best balance between *protection* to the contents and packaging *cost*. The tests were specifically designed to establish actual performance characteristics of each packaging element and to determine the relationship between packaging parts. To achieve this objective a great number of variables had to be considered and analyzed.

The shipping container for the glass bottles was studied to determine the relative merits of single versus double-wall construction and cushioning provided by type and direction of fluting. Interior packing was studied to determine the following:

1. **Proper number and type** of packing pieces required.
2. **Most effective placement** of the packing pieces.
3. **Proper fit** to be provided the bottles.
4. **Optimum construction charac-**

Fig. 1

Code C Cushioning Test Results
Comparing A-Flute With B-Flute Partitions

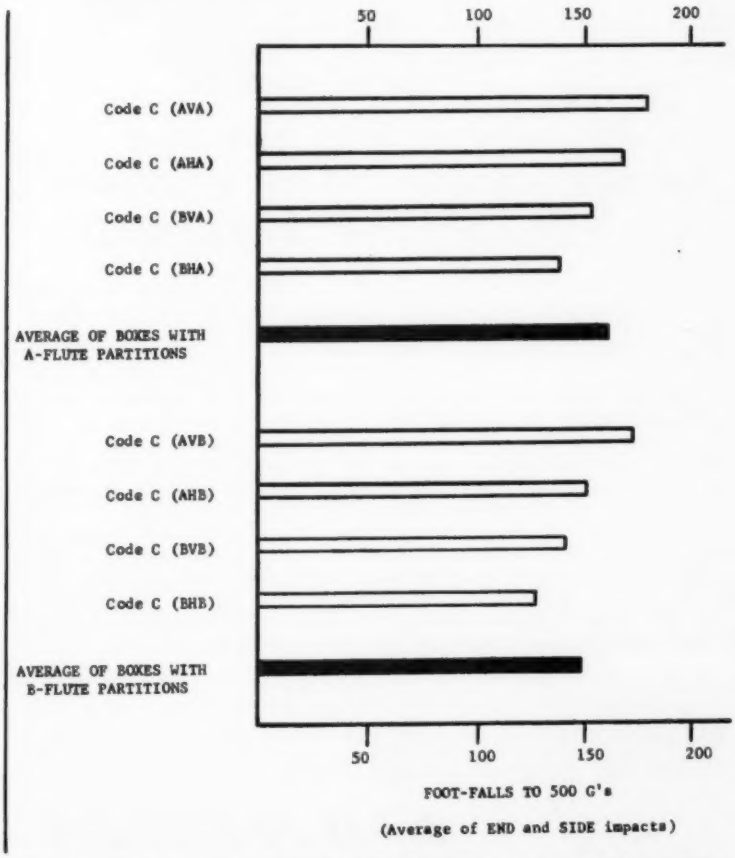

Fig. 1. Comparison of results of testing Code C cushioning with A-flute and B-flute partitions.

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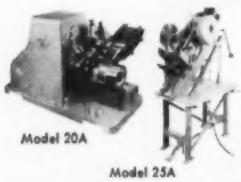
***Get better looking, lower cost package identification and decoration with a* MARKEM METHOD**

Hand stamping, using decals, stenciling — such methods can not only reduce the attractiveness and sales appeal of your package, but consume valuable time as well. "Outside printing" requires large inventories . . . causes waste from obsolescence . . . can result in production delays as well. The time and money saving way around these obstacles — with added quality besides — is a Markem Method working in your plant. This is a combination of the right *machine, type* and *specialty ink* to *identify* or *decorate your packages* at the *rate you need, as you need them.* Whether you want to screen decorate designs on molded plastics . . . print pressure sensitive tape with product name, trademark and directions for use . . . imprint variables on bakery labels, set-up or flat folding boxes, lithographed cans or lids — there's Markem equipment and a proven method for the job. The two machines shown are typical of more than a dozen used in the packaging field; type-wheels, or masterplates and typebars, make imprint changes fast, easy; 10,000 currently available specialty inks offer virtually any combination of color, drying speed and special property you want. In many cases, Unitized Markem printing heads can be combined with packaging equipment.



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teristics required, i.e., single versus double-wall construction, and the type and direction of fluting.

Figs. 1 and 2 are typical charts used in the analysis of A-versus B-flute and vertical versus horizontal corrugations.

However, despite the fact that our analysis considered the packaging elements separately, the final decision was in cognizance of all packaging pieces as an integral unit —not as separate parts.

Interior Packing Vital

Analysis of test data disclosed that the **interior packing played a more important role than the shipping container in minimizing bottle breakage resulting from handling and shipping. Furthermore, the placement of the interior packing pieces was discovered to be a most critical factor.**

It was clearly established that, for this particular commodity, it was more efficient and subsequently more economical, to design packaging with emphasis on maximum cushioning *between* the bottles rather than maximum cushioning *around the periphery* of the bottles. As an example, double-wall cell partitions were proven to provide better protection to the bottles than a double-wall shipping container.

It was also discovered that by improving the quality of the fibreboard within the grade, particularly its cushioning properties, better bottle protection was gained without the additional cost of upgrading the board or adding more packing pieces.

Review of original packing designs used by the distiller disclosed that peripheral bottle protection had been emphasized. Codes A, B and D, although varying with respect to shipping container construction and the number of interior packing pieces used, had two thicknesses of fibreboard around the periphery of the load.

This had been accomplished either by a double-wall shipping container (Code A) or a single-wall shipper with a full height side and end liner plus top and bottom pads

(Codes B and D). This concept of peripheral bottle protection had been outlined and approved in the requirements of the rail freight classification committees.

Use of non-test interior pieces proved to be inadequate in this study since the particular non-test board used was so inferior in maintaining its cushioning quality after successive impacts as to be wholly inadequate. Since the quality of non-test board is variable, and consequently difficult to predict performance wise, only test grade fibreboard was specified in the final recommended design.

Another important conclusion resolved by testing was that the **protection provided the whiskey bottles was improved by having the fit of partitions in the boxes as snug as possible** within the limits of commercial practice.

Final Evaluation

Nine groups of packaging methods, all four from the first investigation and five from the secondary study, were subjected to all of the following tests: Compression tests, cushioning tests, incline impact tests, and revolving drum tests. Since the results of these various tests are expressed in different units, and since the figures are of different orders of magnitude, it is convenient to convert them to a common basis, such as an *index number*. (See Fig. 3) (*Turn Page*)

Fig. 2

Code C Cushioning Test Results
Comparing Vertical With Horizontal Flute Partitions

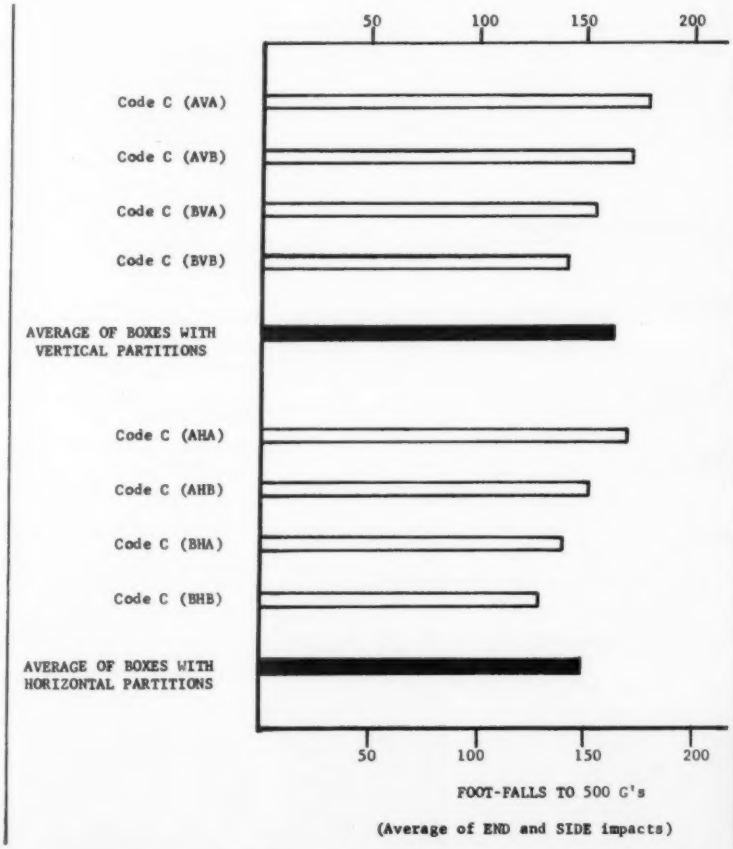

Fig. 2. Comparison of results of testing Code C cushioning with horizontal flute partitions.

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. . . with flexible plastic film or any of many paper combinations—designed for long-time storage protection or temporary protection during handling.

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The index number, essentially, is a rating in terms of the results achieved by Code A. Code A was selected as the base because it represented one of the styles of packing in commercial use by the distiller and was commonly regarded as the preferred style.

Specifically, the average compressive resistance at ¾-in. deflection in the top-to-bottom direction and at ½-in. deflection in the end-to-end and side-to-side directions of the Code A boxes with interior packing was arbitrarily regarded as 100 per cent, and the average compressive resistance of the other groups was rated accordingly during this final evaluation.

In similar fashion, the ratings or index numbers of the other groups were computed for the remaining tests after the arbitrary assumption had been made that Code A's average number of foot-falls for end and side impacts in the cushioning and incline tests and the average number of falls in the revolving drum were 100 per cent in each instance.

Fig. 3

Comparison of Relative Test Results (Code A Considered 100%)

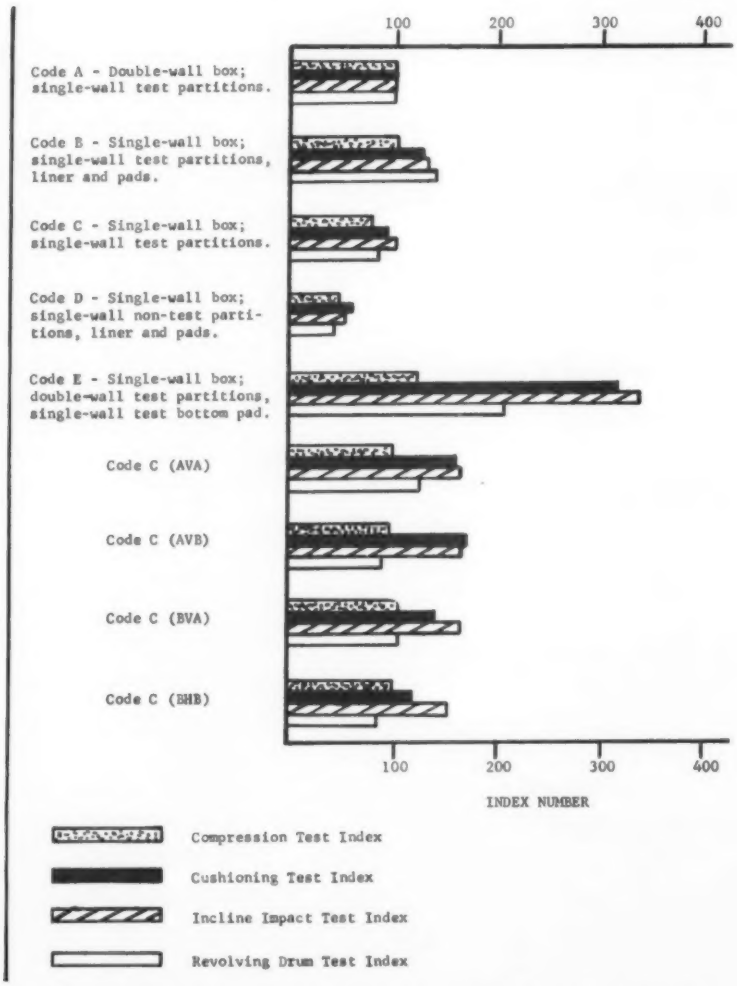


Fig. 3. Comparison of index numbers of relative test results where Code A is considered as 100 per cent.

Fig. 3 reveals the following points:

1. Code E (single-wall box, double-wall test partitions, single-wall test bottom pad) **was best in all tests;** and **Code D** (single-wall box, single-wall non-test partitions, liner and pads) **was poorest;** both by wide margins.

2. Code B (single-wall box, single-wall test partitions, liner and pads) **was better than Code A** (double-wall box, single-wall test partitions) **in all tests;** and **Code C** (single-wall box; single-wall test partitions) **was poorer than Code A** in all but the incline impact test, where it was the same.

3. All four variations of Code C did better than the original Code C in all tests.

4. Average index numbers of the four variations of Code C were exceeded only by Code E in the cushioning and incline impact tests, and only by Codes E and B in the revolving drum and compression tests.

5. Compressive resistance with interior packing in place is not as informative an index of the general quality of a style of packaging for glass bottles as the other tests. It will be noted that, although the best style (Code E) had the highest compression test index number and the poorest style (Code D) had the lowest compression test index number, the range between the highest and lowest compression test index numbers is less than one-half the range for any other test.

Use One Index Number

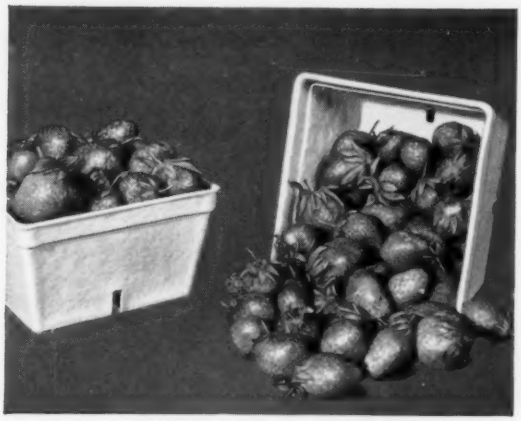
To arrive at a final evaluation of the relative merits of the different styles of packaging, it was desirable to have only one index number for the performance of each as well as a cost index. (See Fig. 4)

The performance index number for each group is simply the average of the cushioning test, incline impact test, and revolving drum test index numbers for that group shown in Fig. 3. The compression test index was not included by virtue of point (5) in the discussion of

For Sandwich Spreads

For Lamps

For Glassware



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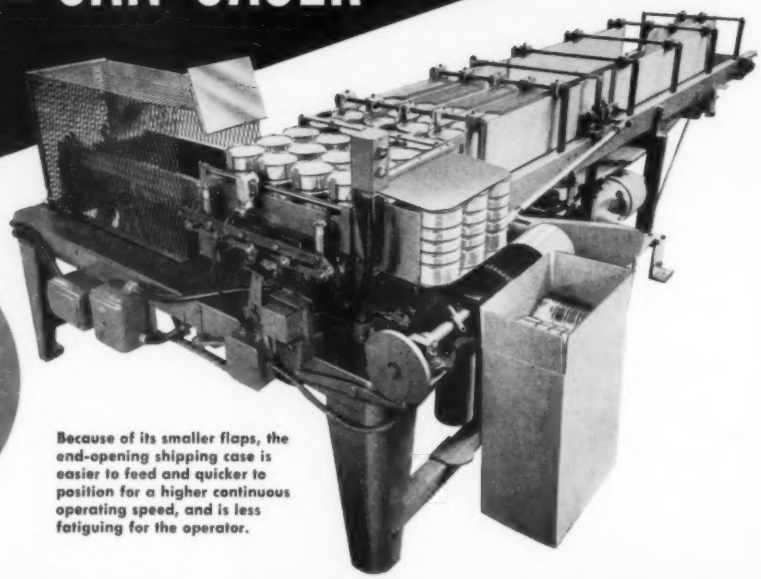
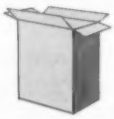


Because of its smaller flaps, the end-opening shipping case is easier to feed and quicker to position for a higher continuous operating speed, and is less fatiguing for the operator.

NON-SHOCK END-OPEN CASER

FOR SINGLE TIER LOADING

46 OZ. AND NO. 10 CANS



With end-opening shipping cases showing a savings of about 15% in fibre alone, no wonder packers using single tier patterns have welcomed FMC's development of this continuous, high speed, automatic caser. Employing many of the key design and construction features of the FMC Model 3 Caser for top-opening cases, this new machine easily handles 1200 cases per hour or more, limited only by the speed of the operator. Cans enter the machine upright, eliminating rolling can impact. As a result, there is no tearing of labels or scratching of lithography; no body dents or split seams. Although used largely for the more common can sizes cased in single tiers (46 oz. and No. 10 cans), the FMC Non-Shock End-Open Caser may also be built for single tier packs of smaller size cans. This machine is a truly remarkable achievement in the field of automatic casing equipment. Write today for complete information, or call your nearest FMC representative.

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Fig. 3. Code A, of course, had a performance index number of 100 by arbitrary definition.

In determining the cost index, the first step was to calculate the total area by grades of corrugated fibreboard used in a single package of each of the groups. The non-test board used in the interior of Code D was evaluated at 80 per cent. The 200-lb. test double-wall board used in Codes A and E was evaluated at 150 per cent of regular 200-lb. test single-wall board. With these factors applied, the equivalent square feet in terms of 200-lb. test single-wall board in each of the types of complete boxes were computed and converted into a cost index, again using Code A as the base, or 100 per cent.

Finding Best Variation

The significant points to glean from Fig. 4 are:

1. **The cost index numbers of the variations of Code C** (single-wall box; single-wall test partitions) **are substantially similar, but the performance index numbers vary widely. Code C (AVA),** with vertical A-flute boxes and partitions, **is the most efficient of the variations. Code C (BHB),** with vertical B-flute boxes and horizontal B-flute partitions, **is the least efficient.**

2. **Code C (AVA),** which has exactly the same construction as Code C and, therefore, the same cost index, **is far more efficient.** As previously demonstrated, **this is the direct result of superior flat crush resistance of the boxes and partitions of Code C (AVA).**

3. **Code B** (single-wall box, single-wall test partitions, liner, and pads) **has a higher cost-index number and a lower performance index number than Code C (AVA)** and is, therefore, inferior to the latter. It should not be considered as a packaging style for twelve 4/5 quart bottles.

4. **Code D** (single-wall box, single-wall non-test partitions, liners, and pads) **has a cost index about the same as Code A and a very much lower performance index.** It was by far the least efficient of all groups investigated, despite the fact that, with Code A, it is one of the styles of packaging in common commercial use.

The above four points indicated that Codes B, C (original), D, and all variations of Group C other than C (AVA) could be eliminated from consideration. This left Codes A, C (AVA), and E to be analyzed and compared.

5. **Code C (AVA), at approximately three-fourths of the cost of Code A** (double-wall box, single-wall test partitions), **had a general performance one and one-half times as good.** (See Fig. 5)

6. **Code E** (single-wall box, double-wall test partitions, single-wall test bottom pad), **at approximately the same cost as Code A, gave a general performance almost three times as good.** (See Fig. 5)

Making Final Choice

The choice of packaging style for twelve 4/5-quart bottles seemed to lie, therefore, between Code E and Code C (AVA) made of components with a good flat crush resistance. The former entailed approximately the same packaging expenditure as that presently incurred, but with vastly improved protection. The latter would result in a notable saving in cost, with a sig-

Fig. 4

Evaluation of Groups on Basis of Cost Index and Performance Index - (Code A Considered 100%)

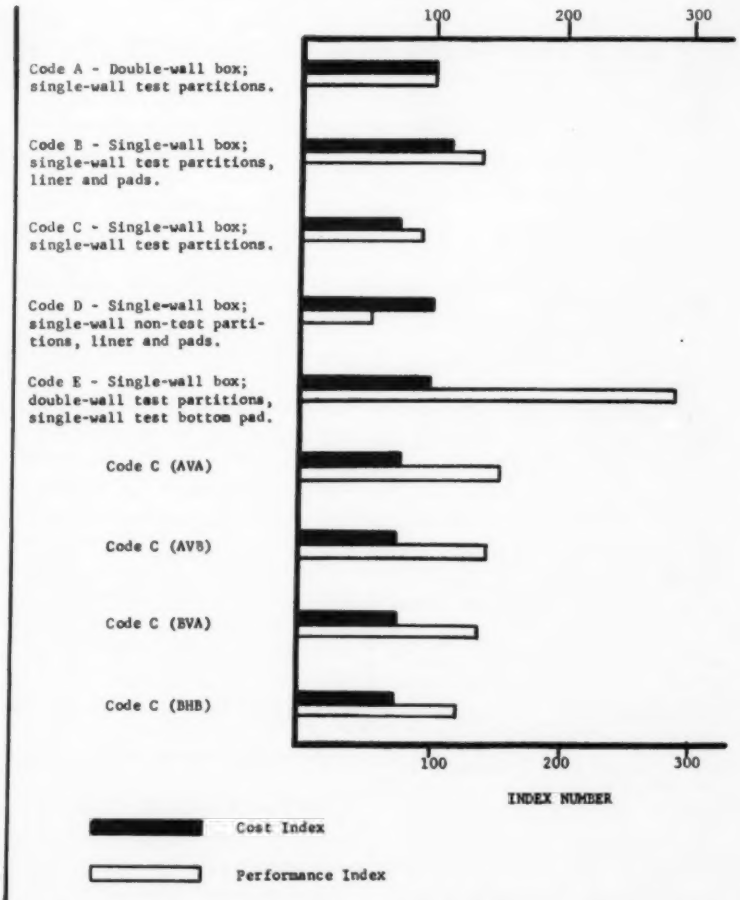
100
200
300
Code A - Double-wall box; single-wall test partitions.
Code B - Single-wall box; single-wall test partitions, liner and pads.
Code C - Single-wall box; single-wall test partitions.
Code D - Single-wall box; single-wall non-test partitions, liner and pads.
Code E - Single-wall box; double-wall test partitions, single-wall test bottom pad.
Code C (AVA)
Code C (AVB)
Code C (BVA)
Code C (BHB)
100
200
300
INDEX NUMBER
Cost Index
Performance Index

Fig. 4. Evaluation of groups on the basis of cost index and performance index where Code A is considered as 100 per cent.

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Fig. 5

Comparison of Present Boxes with Proposed Boxes.

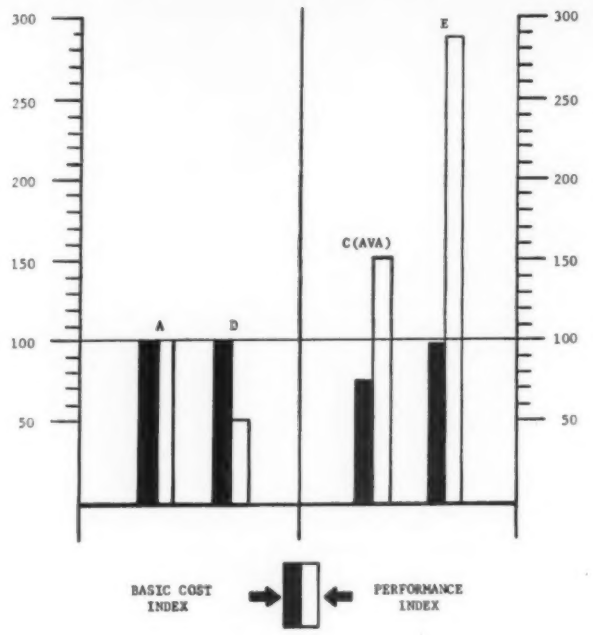


Fig. 5. Comparison of cost index and performance index figures of the present box with the proposed box.

nificant increase in protection. It was further concluded that the bottom pad in Code E was superfluous and should be eliminated if Code E were given serious consideration.

After careful consideration by the distiller, supported by additional field trials, it was decided to employ the packaging system described as Code C (AVA). The results were highly successful and significant savings have been realized. In order to obtain full benefits from the new packaging system, it was necessary to petition the rail freight classification committees for a change in the then existing requirements for the packaging of 4/5-quart bottles of whiskey.

This change was approved by the classification committees in view of the extensive test data supporting this change and the favorable field shipping experience. The change in packaging style had even greater consequences as a result of this approval since this style of packaging has been adopted by other packers of the same commodity. (*End*)

Copies available free

Parts I, II, and III of the foregoing article, How to locate optimum placement of cushioning for liquids in glass containers, appear in our October, November, and December issues, respectively. Complete copies of the article are available free to anyone requesting them. Write us on your company letterhead stating the number you need. We'll send them as long as our supply lasts.

News highlights of Packaging Institute

The corporate award:
Bristol-Myers Company won Packaging Institute's corporate award for its Ipana-Plus dentifrice packaging in an interior-lined polyethylene container—involving a research project encompassing nearly ten years.

The professional award:
Charles A. Southwick, Jr., Hope, New Jersey, packaging consultant, won the professional award on the basis of his contributions to packaging technology for over 30 years, including his development of tests and specifications.

Technical Operations Committee award:
James H. Parliman, Plax Corporation, won the 1958 TOC award for the most informative technical paper presented at the forum. His paper, entitled "Lined Polyethylene Bottles," discussing lined polyethylene containers, covered end uses and permeation data—with test methods and quality control.

A new president, new directors:
Charles W. Kaufman, National Dairy Products Corporation, was elected president. George Weissman, Philip Morris, Incorporated, was elected a PI vice president. Newly elected directors include John C. Clay, National Starch Products, Inc.; C. Paul Bolton, Carnation Research Laboratories; Norman L. Esthus, Morton Salt Company, and Fred W. Langner, Socony Mobil Oil Company.

Next year's forum:
PI will hold its 21st annual national packaging forum in New York (Hotel Statler), November 16-18, 1959.

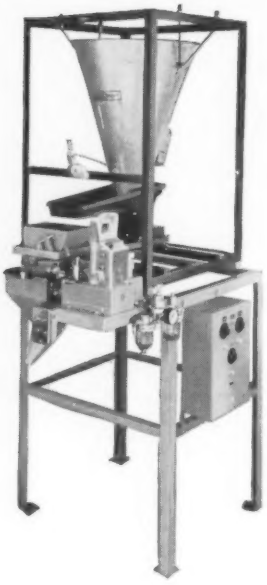
Packaging Institute holds 20th annual national forum

Handling adhesion problems on the packaging line, training of packaging personnel, and factors affecting packaging line layout received scrutiny of those attending the production line seminar. Other sessions at the recent Packaging Institute forum devoted attention to aerosol packages in the drug and pharmaceutical field, reviewed linings for plastic bottles, and examined some specialized problems of food packaging. Forum participants also gave attention to closures, including their selection and requirements.

Increased machine speeds, variations in machine set-up, and variations in packaging material properties are three major causes of adhesion problems, Harold E. Smith, Hiram Walker & Sons, Inc., told those attending the production line seminar. Stressing the need of systematic sampling and testing of adhesives, Mr. Smith urged that new adhesives be laboratory tested prior to release to the production line. Such testing shows whether adhesives withstand surface or storage conditions the packaged product may require, Mr. Smith noted. He emphasized the importance of sufficient time to pre-test such adhesives. He reminded his audience of the importance of properly introducing new products to production line personnel and of a production line trouble-shooter being able to ferret out the causes of adhesion difficulties by interviewing production line personnel.

Urging careful selection of machine set-up men, Ralph E. Mottin, Parke, Davis and Co., reviewed some qualities of a good set-up man: High mechanical aptitude; an inquisitive nature; an inherent

Save production costs . . . eliminate overweights



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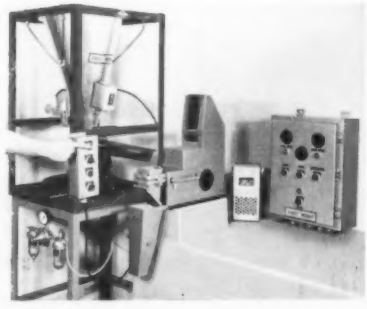

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reserve, and an ability to merely sit and watch properly running machinery. Stressing the importance of correct training, Mr. Mottin said that some companies use a deliberately misadjusted machine, let a man see how quickly he can get it going. "If the right machine set-up man is not selected, all of the time and money that goes into a training program will be wasted," Mr. Mottin concluded.

It is just as important to plan realistically for one line as for an entire department, Hugh W. Lyons, Merck, Sharp & Dohme, told his audience. He advised letting operating personnel help plan the line and urged calling on machinery manufacturers for similar help. Noting that the more flexible line is the better, he pointed out that a line can be too flexible and too adaptable. If it is constantly being changed over from one product to another, too much valuable time is lost and the line isn't worth much, Mr. Lyons asserted. In planning a new layout, he urged the use of scale models for people, machinery, and buildings. "Study it, plan it, and then install it," Mr. Lyons concluded.

Pharmaceutical Aerosols

There is definite interest in a pharmaceutical areosol, Edwin Pomerantz, Chas. Pfizer & Co., Inc., told those attending the drug and pharmaceutical seminar. Such packages permit exclusion of outside contaminants and use of metered valves for accurate dosage. Mr. Pomerantz suggested the term "nitrosol" for nitrogen-propelled aerosols. He called for development of a more or less universal can lining free of pinholing.

With a pharmaceutical aerosol, there is a dispensing form not readily available in other packaging, Samuel Prussin, Aerosol Techniques, Inc., declared. While he cautioned that a mere changing to a new form of package does not insure its success, he predicted "a big future" for aerosols in the inhalation therapy field. "An exciting

development is the metered valve which can be regulated to varying volumes by means of a floating ball metered valve action," Mr. Prussin said.

Plastic Bottle Linings

Urging more attention to package testing, J. D. Czarnecki, Bradley Container Corporation, declared that a small package yields as much information as the laboratory needs. Further, it avoids the problems of having to handle large packages. He warned, however, against storing samples in places where they may absorb odor, and stressed the importance of determining whether an ingredient is soluble in polyethylene. Mr. Czarnecki urged care in the use of polyethylene, but at the same time predicted great improvement in the extension of its use.

The lined polyethylene bottle is "an exciting prospect," J. H. Parliman, Plax Corporation, told his audience. Linings such as those of polymeric materials act as barriers between the liquid and the polyethylene, and perform other functions such as the retention of perfume, lubricants, or other product ingredients. Permeation tests came about in order to measure the function of the liner, Mr. Parliman asserted, noting that a major problem in this connection was to assure the quality control of linings. He said that the weight loss of lined bottles should not exceed seven per cent of the weight loss of three unlined bottles.

Many plastics can be coated and can provide a two year shelf life, Ralph H. Thomas, Bristol-Myers Company, stated. But he warned his audience to watch for toxicological effects when choosing a plasticizer to add elasticity, softness, and water resistance. Mr. Thomas declared that a liner must adhere uniformly to the surface of the container in order to be successful. The goal of a lining should be minimum pinholing, no odors or colors, flexibility, and minimum brittleness, he concluded.

Accurate, realistic package requirements should start with the consumer, J. M. Heinen, Continental Can Co., Inc., told those attending the food packaging seminar. Protection, performance, convenience, and final container cost must be in balance. Mr. Heinen pointed out that can lining materials have been improved and that new soldering techniques provide smooth side seams for printing completely around a can. He predicted increased acceptance of composite containers, including combinations of glass, paper, plastic, and metal—and concluded that the *right* container is not necessarily the biggest or most expensive one.

It is necessary to control organisms, G. R. DiMarco, Rutgers, the State University, told his audience, while explaining pathological aspects of prepackaging fruits and vegetables. The majority of rot in these commodities results from organisms present on or in the fruit at time of packaging, Mr. DiMarco noted, adding that cooling reduces organism activity. Another means of reducing it might be to incorporate a gas producing chemical in the package. He urged the treating of commodities in the field—if they are to be prepackaged.

Reviewing a new 0.003-in. polyethylene package for liquid lemon juice, Owen K. Burman, Sunkist Growers, noted that its fitment is tapered to fit tightly. He said that the hole in the fitment is always open, but the screw cap is designed so that when screwed all the way down, it forces the hole in the fitment shut to prevent leakage. Stressing the need of a gas impermeable plastic for this product, Mr. Burman noted that the sulfur dioxide used as the preservative escapes because of the material being a poor gas barrier. He predicted a much longer shelf life once a gas impermeable plastic becomes available.

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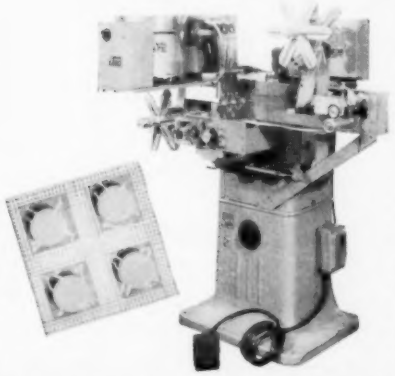

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Henry King, Supermarket Institute, asserted. He warned his audience of the need of packages calculated to discourage pilferage, explaining that more than $300,000 a day "walks" out of supermarkets in this country. He also stressed the problems of weight and cube to supermarket operators and urged functional and structural package designers to plan weight and cube conducive to store stacking.

What Closures Must Do

In choosing a closure for food packaging, L. A. Von Till, Kraft Foods Company, warned his audience that its price should be kept low without sacrifice of quality. It must provide a positive barrier to air passage, especially for products affected by air or those packed under vacuum. Mr. Von Till said there must be enough pressure to affect a good seal and that this pressure must be greater than any which might develop inside a jar later. In addition to functioning properly on high speed equipment, the cap should be corrosion resistant, not affected by product, with a liner that is tasteless, odorless, non-toxic, and resistant to deterioration.

Some Vital Properties

Key properties of modern closures include adhesion, flexibility, hardness, color stability, product resistance, and processing resistance, according to G. M. Shiffler, Stoner-Mudge Company. Noting that the latter two are "problems," Mr. Shiffler suggested their tests should include their tumbling, and storage, room, and elevated temperatures. He warned that high storage temperatures eliminate closures otherwise satisfactory.

A universal cap liner is possible, but highly improbable, Tracy Cowen, Standard Insulation Co., declared. He said that one liner cannot incorporate all of the properties of a good liner any more than a single film should do all of the jobs performed by many films. Properties which he cited include white or blondish appearance, resilience, callused texture, shininess, toughness, a rugged outer shell, punchability, non-blocking, ability to protect the closure as well as its container, resistance to alcohols, acids, alkalies, and other substances, be non-toxic, odorless and tasteless, have low water and gas transmission rates, abrasion resistance, low release cork, and good sealing properties—among others.

How About Aluminum?

With proper choice of alloy, temper, and gauge, aluminum can be fabricated into a pre-threaded closure, A. G. Osborne, Aluminum Company of America, told his audience. Also, it can be formed into a cap with threads invisible from the outside. However, Mr. Osborne warned that the properties of this material cannot be used advantageously when merely chosen as a substitute for other materials.

This concludes Packaging Institute highlights. Turn to Page 62 for SPHE short course highlights.

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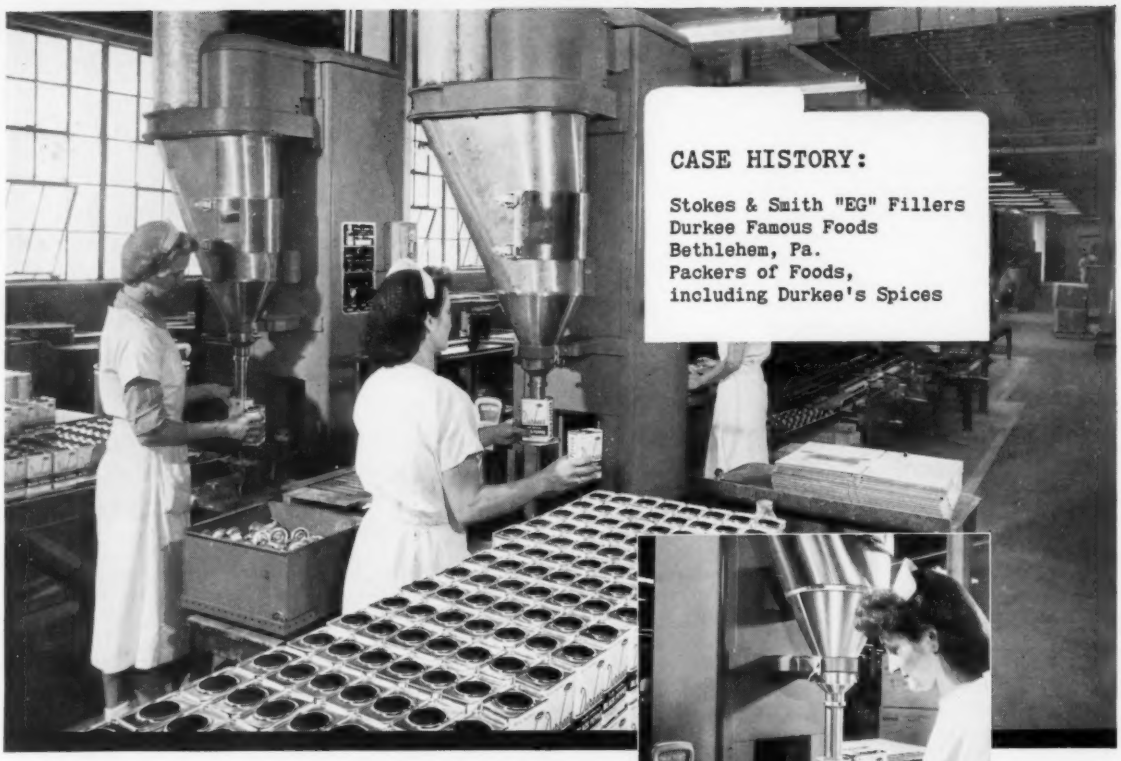

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Packaging highlights from annual SPHE short course

Close attention to details of planning a packaging program, latest developments in cushioning material and techniques of its selection, current trends in corrugated boxes—these were among topics receiving attention during the packaging sessions of the recent annual short course of Society of Packaging and Handling Engineers. (SPHE is the new name for SIPMHE. Its members voted the change to get a simpler, less restrictive name). Staff members of the University of Illinois' department of mechanical engineering, as well as user and supplier packaging industry specialists, participated in the short course held in Chicago.

In organizing a packaging program to cut excessive costs and to eliminate customer complaints, a starting point is to determine *why* costs are high or complaints take place, Elaine R. Pitts, Sperry and Hutchinson Company, told those attending the SPHE short course. Upon learning the "why," the next job is to study present facilities to determine problems and specific sources of unnecessary expense, Mrs. Pitts observed. She directed special attention to (1) markings, (2) protection against damage, (3) economies in warehousing and shipping, (4) pack size, (5) controls, and (6) training of personnel. "List your goals in order of their importance, placing first those resulting in major cost reductions," Mrs. Pitts said. "But if there are savings which can be made immediately and which do not require too much time to accomplish, do them first," she added, emphasizing that these savings can be accumulating while work proceeds on more detailed or time consuming projects.

Choice of Cushioning

Selection of cushioning materials demands attention to three basic factors, R. K. Stern, U. S. Forest Products Laboratory, told his short course audience: (1) Fragility of the item; (2) shock and vibration conditions a package experiences during shipment, and (3) the shock and vibration isolating ability of the protective packaging—including cushioning material and outer container. While he urged care in the choice of material, Mr. Stern warned that at present "exact" cushion design is still seriously hampered by a general lack of fragility values for items, although, he noted, certain companies and agencies have developed methods of fragility testing. "A packaging engineer should consider cushion selection as an approximation," Mr. Stern said. "Instrumented tests of complete packages should be conducted whenever practical to do so," he concluded.

Corrugated Box Trends

Advances in board and liner for corrugated boxes have been "phenomenal," J. P. Corcoran, Central Fibre Products Company, declared. Recent developments include water resistant liner board to withstand the effects of hydro-cooling in fruit and vegetable packaging, and the laminating of various materials (for example, aluminum foil) to liner board typify today's trends. Noting that interior packing has long been the "forgotten" part of packaging, Mr. Corcoran

said that laboratory and pre-shipment testing plus new advances in design are helping focus on inner packing the attention it deserves.

New Devices, Machines

"To attain and maintain economies so vital in the quest for reasonable profits, the least exploited functions are the packaging and shipping activities," Walter Pisarski, Stewart-Warner Corporation, stated to his short course audience. He urged giving them more attention in order to get optimum capacities compatible with modern production methods. Noting the development of many devices to increase production, cut labor, and facilitate material usage, Mr. Pisarski said it is essential that personnel operating them be properly trained. Among new developments of special interest he included stitching equipment with an adjustment to drive two parallel rows of stitches at the right and left end of e.g. a two-piece telescope box by merely using one side of one of the arms as a guide for placement of two rows and then using the other side for the second two rows. An "interesting" small tool now available is a device to expand compressed cellulose wadding in roll form to the degree of compression desired, Mr. Pisarski observed.

Trend To Weight Cuts

In analyzing high capacity containers, users should look to total cost rather than determining requirements based on initial cost analysis, Thomas J. Luddy, National Wooden Box Association, stated. He noted a trend toward a reduction in tare weight by redesign, and emphasized the importance of unity of action by the packaging engineer, materials handling engineer, and shipping superintendent in the thorough planning that should precede any decision concerning a high capacity container system.

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age evaluation, according to Richard H. Witting, Montgomery Ward & Company. He stressed the importance of examiners at mail order houses and in merchandise departments who furnish information leading to package changes. Mr. Witting pointed out that his company's package engineering section serves as a watch dog to assure that source packaging is satisfactory for the numerous handlings and multi-shipments involved from the source manufacturing a product to its arrival in a customer's hands. At the same time, packaging engineers rely on buyers for information in developing packages for new items entering stock each year.

Controlling Quality

"Quality control in packaging operations or package manufacturing is basically no different than quality control in product manufacture," George F. Schrader, University of Illinois, told his audience. He asserted that the surveillance and regulation of manufactured products does not end in final assembly or final processing, but must be continued until it is in the hands of the ultimate consumer. Well-designed standards are the basis of effective quality control, according to Mr. Schrader. Further, quality control should denote a control activity designed to provide the proper regulation of manufacturing activities at quality levels consistent with predetermined optimum economy standards. Statistical methods will assist in determining these levels, he emphasized.

Cost estimates must always be guesses to a certain extent, but the probable amount of error in them can be forecast by means of common statistical methods, Lawrence E. Doyle, University of Illinois, said. Some errors arise from trends such as price changes and others from chance variations in performance. Standard techniques allowing for both kinds can easily be adapted to cost estimating, according to Mr. Doyle, who stated that alert cost estimators are using statistical methods to show what degree of precision can be expected in a cost estimate when a specified amount of money is spent on it, what must be expended to realize an estimate within a required degree of accuracy, and how much contingency allowance must be made for safety, for example.

Turn to page 57 for a report on PI's 20th annual Forum.

Michigan State steps up drive for $2,000,000 for School of Packaging building

Spearheaded by H. G. Walter, executive director of its Packaging Foundation, Michigan State University's drive for funds with which to build new facilities for its school of packaging is increasing in tempo. Object of the drive is to raise $2,000,000 with which to construct and equip a building adequate for both the teaching of students and the conducting of packaging research on the Michigan State campus at East Lansing.

In 1957 the university established Packaging Foundation, Incorporated, a non-profit organization empowered to accept funds as gifts to finance the building of packaging facilities. At this time, the university named a board of trustees (listed below) to guide the work of the foundation and to facilitate its fund-raising activities.

Also, the university now has an advisory committee whose members (listed below) assist the school of packaging in planning its facilities, curriculum, and research activities.

Students at Michigan State seeking packaging education have overwhelmed the currently inadequate facilities. As a result, there has been a sharp cut in packaging students because lack of facilities has forced the university to cut packaging student enrollment down to a size it can handle with existing facilities.

All this emphasizes the university's pressing need for funds for the packaging program, according to Mr. Walter, who points out that Michigan State is actively seeking contributions necessary to finance the expansion of facilities.

Companies and individuals wishing to make contributions or wanting further information about the program should contact:

Mr. H. G. Walter,
Executive Director,
2918 North Kenneth Avenue,
Chicago 41, Illinois
Telephone: Pensacola 6-2449.

Tentative plans for a three-story-and-basement structure for the school of packaging have been prepared. And while the foundation's board of trustees proceeds to guide the raising of money, the school of packaging continues with the teaching of such students as it can handle.

The board of trustees of Packaging Foundation, Incorporated, includes the following:

Dr. Paul Armstrong
13545 D'Este Drive
Pacific Palisades, California
(formerly general manager, Sunkist Growers, Los Angeles, Calif.)
Dr. Morris J. Day, vice president
Crucible Steel Company
Oliver Building
Pittsburgh 22, Penna.
H. C. Diehl
Refrigeration Research Foundation
12 North Meade Ave.
Colorado Springs, Colo.
N. J. Ellis, general director
Industrial relations
Chevrolet Motor Division
General Motors Corporation
Detroit 2, Mich.

(Continued on Page 71)

Announcements of machinery and products

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String-Opening Container

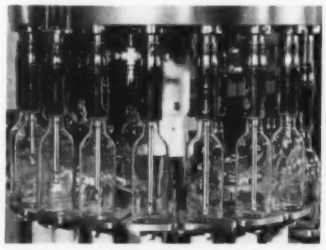
American Can Co. has announced a new string-opening biscuit dough container, a can with metal ends and a body of four-ply construction. The first and fourth plies are foil and the middle plies are paperboard. A pull string is incorporated in the second and third plies so that when it is pulled spirally the length of the container, it cuts the paperboard of the middle plies of the body wall, as well as the fourth ply of foil. The container is then opened by grasping it at both ends and twisting it in opposite directions. Circle No. 1.

Three-Ply Paper

Riegel Paper Corp. has developed a three-ply paper, Triplex, for making "semi-rigid" bags. Especially useful for bakery products, the new paper is greaseproof and will not permit "wicking" of shortening through seams, creases, or folds. Triplex offers a white printing surface. Circle No. 2.

Foamy Products Filler

Horix Mfg. Co. has designed a machine for under-surface filling of foamy products. Known as the Model HB-BS-9, the machine uses a double action valve in such a way that the filling tube is gradually withdrawn from the container at such a rate that the



entering liquid is always just below the liquid surface. This is in contrast to bottom filling where the tube remains stationary at the bottom of the container for the complete filling cycle. This principle is of primary importance where foam is a problem or where a minimum of aeration (or oxidation) of the product is required. Circle No. 3.

Plastic Bottle Carrier

Dura-Pak, Inc., has developed a colored pliable plastic beverage bottle carrier for holding 6, 8, or 12 soft drink bottles. When loaded, the carriers fit into either

standard or carton cases. The carriers feature handles of plastic constructed to stand a "pull" of 50 lbs., are durable, lightweight, and reuseable. Circle No. 4.

Ice Cream Accumulator & Bundler

Hayssen Mfg. Co. has designed a new automatic ice cream accumulating and bundling machine. Designated Model 100-1, the machine takes ice cream cartons (pints, quarts, or half gallons) from the filler, collects them into predetermined groups, and then overwraps them in glue sealing kraft paper. The machine features all waterproof wiring and protective coverings around vulnerable spots such as the heaters; automatic lubrication system; ball bearing cam shaft and taper locked cams, and stainless steel paneling around the frame. Speeds up to 2,100 gal/hr. are obtained. Circle No. 5.

Plastics Pressure Forming

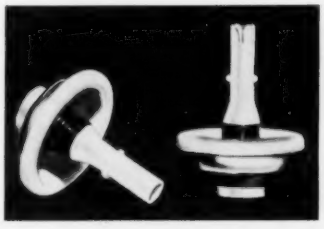
Auto-Vac Co. announces its Model 2428 Pressure-Vac machine, designed for production forming of oriented styrene, Mylar, linear polyethylene, nylon, and other plastics. The new unit forms 28 sq. ft. of molded plastic/min. The forming area is 23" x 28", with a mold depth to 6". Materials from ¼ mil to 250 mil thickness may be used. Production rate, with one operator, is up to 250,000 pocket units/8-hr. day. No material pre-heating is required. Direct contact heating of the plastic not only allows faster operating cycles, but offers better heating control. Circle No. 6.

Fragile Products Filling

Stuyvesant Engineering Co. announces its Fillmaster Uniflow package filling machine designed especially for filling fragile products. The machine passes product from the bottom of the hopper into a vibratory feeder and from thence to a circular reservoir over a rear measure in the top dial plate. As the dial plate rotates, one of the measures stops automatically under the reservoir. The product drops into the measure. Since the head of product is reduced to a minimum, the pressure of the product at this point is also reduced, minimizing breaking, marring, and chipping. Up to 60 filled pkgs/min. are obtained, depending on product and package size. All types of bags and containers may be handled on this machine. Circle No. 7.

Aerosol Tilt Valve

Aerated Container Corp. has a non-metallic aerosol tilt valve for food and non-food products. The valve features a spring-diaphragm



incorporating a limit lock which guarantees uniform preloading, quick acting "shut-off," and a specially designed valve seat which assures a leakproof seal and provides an easily controlled product-flow for accurate upside-down dispensing directly where required, Circle No. 8.

Industry literature available free

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Carton Printer

E. L. Bivans, Inc., describes Model 321 carton printing attachment for its carton set-up machine in a data sheet. This unit prints single or multiple lines in either direction within a 1½" by 1½" area. Cartons may be printed on right panel, back panel, or top panel. Type changes can be made in two minutes. Circle No. **101.**

Label Gluers

King Sales and Engineering Co. offers a 2-page bulletin on its Model F6 label gluer. Line drawings illustrate machine details and halftones show in-plant usage. Detailed specifications are listed for motor- and hand-drive units. Circle No. **102.**

Plastic Bottles & Jars

Imco Container Corp. has a 24-page catalog showing its line of stock sizes and designs of plastic bottles and jars. Illustrations give capacities which range from ½ oz. to 16 oz., and dimensions of each style of container. Also illustrated are spray and dispenser plugs for blown bottles and fitments for injection molded bottles. Circle No. **103.**

Bag Closers

George H. Fry Co. has published a 4-page illustrated folder that gives specifications and operations features of 4 different models of bag closing machines. These are continuous motion machines that will close and seal paper bags up to 3-lb. capacity. It handles bags made of kraft paper, waxed paper, plain or waxed glassine, foil and paper combinations, using either adhesives or the heat seal method. Circle No. **104.**

Tape-Binding Attachment

Dave Fischbein Co. has a Catalog-File of its bag closing equipment, which includes detailed information on its tape-binding attachment for its portable bag-closing machine. This attachment, known as the Faseal, produces tape-bound closures on all types of multiwall paper bags. An attached knife severs tape and thread simultaneously after the closure is made. The bag closer, with the Faseal attachment, can be used as a completely portable unit or in suspension from a counterbalancing Fischbein suspension unit. Circle No. **105.**

Dial Tape Dispenser

Marsh Stencil Machine Co., Inc., offers Brochure D7-5, describing its electric dial taper. This machine automatically measures and dispenses any length of gummed tape from 3" to 39", cut off and moistened, ready to apply to container. Circle No. **106.**

Plastic Vials

Lermer Plastics, Inc., illustrated data sheet lists various sizes of its stock line of plastic transparent vials. Available in minimum quantities of 1,000, you can choose between threaded vials with metal screw caps, shoulder vials with polyethylene slip-on caps, or shell vials with polyethylene plug closures. Sizes range from ½" by 2" to 1" by 4". Circle No. **107.**

Adhesives Handling

National Adhesives Div. has prepared a helpful booklet, "How to Prepare and Use Glues, Pastes and Gums." It tells how to store and care for glue, how to prepare your equipment, how to thin prepared glues and pastes, and reviews six different general types of adhesives. Circle No. **108.**

Package Forming And Filling

Bell Machine Co. has released an illustrated specification sheet on its Bell-Pak machine Model 914-A. It forms a pouch from roll stock, fills, and seals liquid, cream, powder, or semi-liquid products at speeds up to 400/min. The machine requires only 42" x 41" floor space. It can fill different items, different sizes simultaneously. Circle No. **109.**

Semi-Automatic Labeler

MRM Co., Inc., has an illustrated bulletin sheet that describes and gives specifications for the "Uprite" semi-automatic labeling machine. Applying labels to containers in an upright position, this unit is hand-fed. It automatically labels and discharges the container. The machine is said to handle a wide variety of package and label shapes. Range of label size varies from ¾" by 1" to 6" by 8". Range of container sizes varies from fractional ounces to gallons. Circle No. **110.**

Package Testers

L.A.B. Corp. has literature that describes its 3 different package testers. Its incline impact testers and vibration testers range from 400 lb. to 10,000 lb. capacity with table sizes up to 8' by 12'. A drop tester handles packages up to 100 lbs. Price sheets, specifications, and mechanical drawings are included. Circle No. **111.**

Twin Filler

Elgin Mfg. Co. has a data sheet giving information concerning its twin filler. This data sheet contains such specifications as the amount of floor space used, table height, maximum over-all height, capacity of reservoir, shipping weight, etc. of this machine. Circle No. **112.**

Box Closure Methods

Acme Steel Co. offers a Guide to Better Closures, specially prepared for users of fibreboard boxes and packages. The new brochure is intended as a guide for the evaluation of methods currently in use to effect economies and stepped-up production in the closure of fibreboard boxes. It contains information on closure methods such as hand and machine gluing, taping, stapling, and wire stitching. A special section on regulations for sealing fibreboard containers is included. Circle No. **113.**

Automatic Capping

Consolidated Packaging Machinery Corp. has a 6-page bulletin illustrating and describing 8 different models of automatic capping equipment. Halftones of actual installations and a list of users accompanies the descriptive test and general machine specifications. Circle No. **114.**

Polyvinyl Resin Adhesives

Armour & Co.'s Adhesive Div. has released a 4-page brochure on its Seban line of polyvinyl resin adhesives. Brochure illustrates several actual uses of Seban and lists some of the gluing machines on which it is used. Circle No. **115.**

Semi-Automatic Liquid Filler

U. S. Bottlers Machinery Co. offers Brochure #041553, which illustrates its model B2 semi-automatic vacuum filler for any type of liquid. Can fill direct from drum if desired. Circle No. **116.**

Lid Dispensing & Sealing

Karl Kiefer Machine Co. has a 4-page brochure describing its "Top Hat" lid dispensing and sealing machine. Machine separates from a stack triple, double, and single friction type lids, places them precisely on tins, and seals with pressure. Handles 5 standard cans, from ¼ pt. to 1 gal. Variable speeds up to 100/min. Circle No. **117.**

Portable Vacuum Filler

Perl Machine Mfg. Co. offers information on its low-priced, hand-operated portable filler which is capable of filling any size or shape container up to quart size at speeds up to 30 qts/min. Available in models for filling by vacuum, gravity, or a combination of the two, the machine is said to be suitable for

production runs as well as for intermittent and trial runs. Circle No. **118.**

Vial Labeler And Coder

Potdevin Machine Co. offers a data sheet on the Corliss automatic labeler and coder for vials and ampules. This machine both labels and codes automatically in the same operation at speeds up to 46 vials or ampules/min. Unit applies either spot or wrap-around labels. A coding device prints lot number, batch number, etc., anywhere on the label. This portable machine weighs 47 lbs. Circle No. **119.**

Pneumatic Conveyors

Fuller Co. offers Bulletin No. ER-2041-1 which provides full information on its pneumatic conveyors. Text material emphasizes the pneumatic system's length, handling flow arrangement, and special switching features. Also included is a section explaining the economy, sanitation, uniformity, and efficiency resulting from pneumatic bulk handling of flour. Circle No. **120.**

Wrapping Machine

Battle Creek Packaging Machines, Inc., offers a brochure on its redesigned Model 56-G wrapper. The Model 56-G overwraps at speeds up to 90 pkgs/min. It features such devices as automated controls, safety controls, electronic heat controls, and refrigerated discharge. Sizes handled range from 5″ to 15″ long, 2-1/ 2″ to 8-1/2″ wide, and 1″ to 5″ thick. Circle No. **121.**

Polyethylene Paper Coating

Eastman Chemical Products, Inc., has published Bulletin No. F-101 describing "Epolene C," a low molecular weight polyethlene resin specifically designed for use in the packaging field. Its chief characteristic lies in its ability to be roll-coated as a hot melt, yet it retains tensile and chemical properties. It also can be applied as the major or minor component in 44 different wax or resin blends. Compatability, melt viscosity, and cloud point charts are included in the brochure. Circle No. **122.**

Self-Venting Spout

Rieke Metal Products Corp. offers information on its self-venting FlexSpout, a one-piece polyethylene closure. Said to eliminate the necessity for additional closures or vents, the FlexSpout vents in all positions and at any liquid level, insuring a steady flow. The device may be retracted for storage or stacking. It is self cleaning when pulled in up position. Circle No. **123.**

Cellulose Seals

Celon Co. has just issued a twelve-page illustrated brochure describing its cellulose bands and caps, and explaining styles, finishes, colors, printing possibilities, and how the seals are properly applied. Circle No. **124.**

Printed Tape

Central Paper Co. offers a brochure, "Safetex Printed Tapes," which features samples of its printed gummed tapes. The Safetex quality control program is discussed and the brochure also explains how business firms can get individual art sketches from Central's design department. A list of distributors is included. Circle No. **125.**

Imprinting Machine

B. Verner & Co., Inc., manufactures the "Multipress," which is described in a current brochure. This machine is available in 2 models and is designed for imprinting envelopes, cartons, code marking, labels, and tags. Specifications for each model are included. Circle No. **126.**

Production Line Weight Control

Scale Specialties & Systems, Inc., manufactures the "Datamatic" weight calculator. When connected with any checkweigh scale, this instrument records over or under values on a continuous strip chart. It provides an "on the job" record of varying weights enabling you to make quick adjustments to filling machines. A 4-page brochure provides specifications and operating features. Circle No. **127.**

Coding, Marking And Imprinting Machines

Adolph Gottscho, Inc., describes its complete line of marking and coding attachments, in-line imprinting machines, and attachments in a current 4-page illustrated bulletin. Ten different kinds of machines are described which mark or imprint cases, cans, bottles, bags, and web material. Circle No. **128.**

Form, Fill Seal Machine

Mercury Heat Sealing Equipment Co. manufactures a form, fill, and seal packaging machine called the "Verti-Pak." It is air-operated and automatic, packaging a wide variety of products into bags of heat-sealable material. Your own filling equipment can be adapted to it, or machine can be provided with any type filling attachment. Bag sizes range from 1½″ × 2½″ up to 10″ × 18″. A 4-page bulletin provides complete details. Circle No. **129.**

Packaging Machine And Scale

Bemis Bro. Bag Co. offers full details on the engineering and operation specifications for its F & F machine and Trim-Weigh scale unit, which is capable of feeding and filling flour and cereal at better than 40 5-lb. bags/min., within a weight tolerance of + or − .2 of 1 oz. The duo unit requires only one attendant. It handles 2-, 5-, and 10-lb. bags, in tube widths ranging from 6″ to 10-1/2″. Circle No. **130**

Bench Labeler

Pneumatic Scale Corp., Ltd., has released Bulletin 138 on its Colletta universal bench labeler. Five different models of this unit are pictured and described. All models handle widely assorted shapes of bottles, jars, boxes, etc., up to diameter or height of 5-1/2″. On a manually fed machine, speeds up to 40 items/min. can be reached. Circle No. **131.**

Liquid/Powder Filler

G. Diehl Mateer Co. has a 6-page brochure that lists specifications and operating details for the "Mateer Filling Head" which performs the filling operations on Mateer electric fillers. This unit handles powders, liquids, and viscous products. The amount of fill ranges from 1/500 oz. to 10 lb. at rates up to 2 lbs/sec. Circle No. **132.**

Unsupported Thermoplastic Films

Ludlow Papers, Inc., offers a kit which contains samples and lists characteristics of four new unsupported thermoplastic films. Through a process known as Flex-L, two unsupported films, Proplene (a clear, high-gloss packaging film made from Hercules' polypropylene resin) and Caplene (a strong film made from Spencer Chemical Co.'s nylon-6) were developed; also through this prosess two new foamed products, Orthofoam and Metafoam, made from low and medium density polyethylene respectively, were produced. Circle No. **133.**

Conveyor Magnets

Eriez Mfg. Co. Bulletin B87-1 describes its permanent non-electric "Magna-Rails." They are magnet strips fastened beneath conveyor belts to provide safe, positive hold for ferrous parts and containers. They convey, control, and elevate up inclines as steep as 90° Magna-Rails are available in 4 models. Circle No. **134.**

Paper Products Sample Kit

Jonesville Paper Tube Corp. offers a sample kit of paper, tubes, plugs, containers, and protectors packaged in a cylindrical paper container. Included are plain and printed spiral paper tubes, end caps, formed paper plugs to seal openings and protect threads, die-cut paper parts, telescopic tubes, etc. Circle No. **135.**

Electronic Checkweigher

FMC Packaging Machinery Div., Food Machinery and Chemical Corp., recently introduced an electronic checkweigher that spots 1% weight variation at 400 pkgs/min., "on the fly." It is described in a current illustrated data sheet. This is a continuous motion machine that handles a wide variety of package shapes up to 10″ wide by 10″ long within a weight range of 1 oz. to 3 lbs. It handles the production from one or more packaging machines. Circle No. **136.**

Printing On Aluminum Foil

Cochran Foil Corp. has released a brochure describing the various methods of laminating, coating, and printing of aluminum foil. Foil laminations and adhesives are discussed, as are decorative coatings and the effects of the five printing processes—gravure, lithography, letterpress, silk screen, and flexography —on foil. Circle No. **137.**

Automatic Web Control

Electronic Machine Parts, Inc., has an 8-page illustrated brochure listing operating details and specifications for 4 different registration control units. They represent completely packaged photo-electric cut-off and registration control units for use on wrapping, bag-making, and labeling machines. Circle No. **138.**

Stencil Inks

Reynolds Inks, Inc., offers informa-

WHAT DOES A TROUBLE SHOOTER SHOOT **WITH NO TROUBLE IN SIGHT?**

The men of our Crossett Technical Service Department are "trouble shooters" usually without a target.

They spend most of their time developing the exactly right custom board to fit each customer's need. Our cylinder machine production set-up permits the use of both hardwood and soft wood pulps in controlled position in the sheet.

Engineering the correct board for each job stops costly on-the-job trouble before it starts.

If problems do come up in your plant, they are our problems, too. A board expert from our Technical Service Department will be on his way in a matter of hours.

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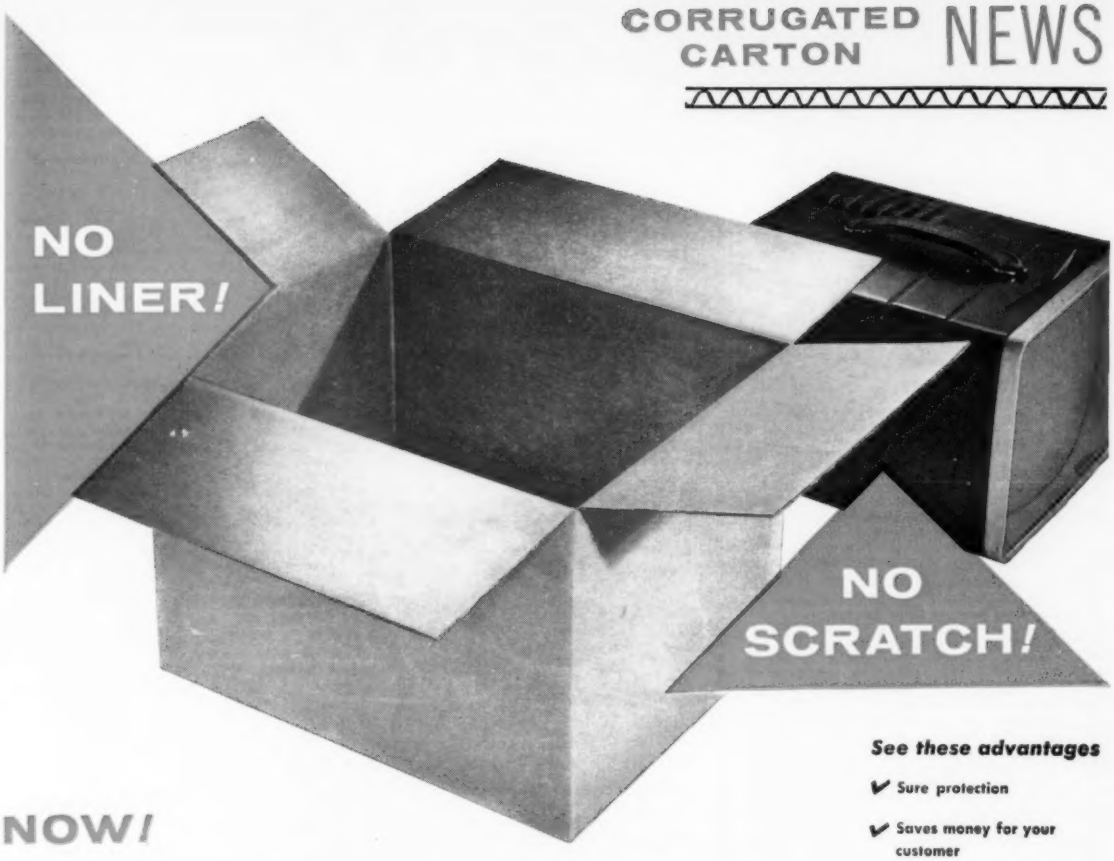

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- ✔ Sure protection
- ✔ Saves money for your customer
- ✔ Applied with standard waxers

NOW!

New A-C Polyethylene Coating ELIMINATES NEED FOR LINERS

...Applies with the ease of wax!

How? The A-C POLYETHYLENE blend is stronger, more durable . . . holds down "scratchy" corrugated fibers—prevents scratching of highly finished appliances, furniture and other merchandise—and it does not rub off or block.

Now . . . you can sell corrugated cartons and spacers that give sure protection to your customer's product without liners! What a sales point!

Simply coat with A-C POLYETHYLENE-and-wax blend, using your *present* waxing equipment.

Result . . . you have a superior, more saleable carton—you save your customers the cost of labor and extra liners! Remember—A-C POLYETHYLENE is applied with your present working equipment—delivers a premium carton. Call or mail coupon today for complete details.

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tion on spray can-packaged stencil inks. Nine colors are available. The inks may be used for the stenciling of cartons, crates, boxes, and metal parts. Water- and weatherproof, these stencil inks are particularly useful for stenciling such items as steel drums. Circle No. **139.**

Cellophane Storage Manual

E. I. du Pont de Nemours & Co., (Inc.) Film Dept., has published a 16-page storage manual telling how to get the best performance from cellophane. It contains practical hints that can be used by operating men in the plant who must handle cellophane under varying climatic conditions. A description of du Pont cellophane codes is included. Circle No. **140.**

Liquid Drug And Cosmetics Fillers

Popper & Sons, Inc., Bulletin No. 955F provides specifications and operating details for 12 different models of precision filling machines. These are volumetric liquid fillers handling vials, bottles, ampules, etc. They dispense aerosols, biologicals, colognes, lotions, perfumes, sprays, vitamins, etc. Circle No. **141.**

Top And Bottom Case Sealer

A-B-C Packaging Machine Corp. offers a 4-page illustrated bulletin describing the operating features of the Model RA automatic top and bottom corrugated case sealer. This machine is recommended when it is necessary to change frequently to different size cases that have a considerable variation in width. A variety of optional equipment is also available such as a case counter, carton selectors, strip gluer, etc. Circle No. **142.**

Hopper Feed Conveyors

Frazier & Son manufactures the Whiz-Lifter elevating conveyor that is described in a current illustrated equipment report. It handles almost all types of dry products in a specially designed interlocking bucket traveling in a horizontal plane at the point of fill. It features product handling in either the horizontal or vertical plane. Conveyor buckets are available in black iron, stainless steel, or Styrene. Specifications and diagrams of three different models are included. Circle No. **143.**

Closures For Catsup And Ketchup

Aluminum Company of America, Closures Div., has just published a 20-page brochure that explains and illustrates the advantages of the rolled-on aluminum closure for catsup and ketchup bottles. Called the Flavor-Lok cap, it is not preformed; it is tailormade to its individual bottle, compensating for variations in glass tolerances. Circle No. **144.**

Packaging Equipment Financing

C.I.T. Corp. has a folder describing the "Pay-As-You-Depreciate Plan." It is a long-term method of financing all types of new packaging equipment. Charts are included showing monthly payment schedules for loans of various terms. Circle No. **145.**

Counter/Batcher For Small Parts

Post Electronics offers a bulletin on its new high-speed, automatic counter-batcher Model FCB-1. Adaptable to small parts, tablets, hardware, etc., this portable machine counts up to 5,000 parts/sec. Circle No. **146.**

Corrugated Shipping Containers

Gaylord Container Corp., Div. Crown Zellerbach Corp., has published a four-page folder entitled "Merchandising With Corrugated." The folder includes a wide range of merchandising type boxes, display shippers, and display stands. Circle No. **147.**

Automatic Imprinting Machines

Van Buskirk & Co., Inc., has a folder on its line of imprinting machines. The flat carton marker, setup carton imprinter, metal container imprinter, clutch face imprinter, and armature imprinter are pictured and described in the folder. These machines are completely automatic, are geared to high or low speeds according to production line rates, and are adjustable to a variety of shapes and sizes. Circle No. **148.**

Heavy Duty Marking Machines

Markem Machine Co. offers information on its Model 103A marking machine especially designed for making large imprints on flat surfaces or objects such as circular saw blades, etc. The machine will mark a maximum imprint area of 9″ front to back by 11″ left to right, on objects up to 1-1/2″ thick. Circle No. **149.**

Collapsible Tube Reference

Wheeling Stamping Co. has a 6-page, easy-to-use reference for selecting and specifying collapsible tubes, plastic closures and specialities, and custom molded tips and caps. The brochure includes illustrations and stock-size tables for general purpose closures, collapsible tube caps, snap-on sifter and liquid dispensing fitments, and stock specialty items such as two-piece dispenser caps, polyethylene eye cups, polyethylene applicators, and triple-thread caps for dentifrice cans. Circle No. **150.**

Rigid Urethane Foam

Allied Chemical Corp. has released a new booklet giving the latest formulations and requirements for foamed-in-place applications of rigid urethane foam in boats, building construction, and thermal insulation. The brochure explains foamed-in-place uses of closed cell rigid urethane foams. A technical data sheet listing formulations, storage requirements, heat and humidity aging properties, and methods of pouring and curing of polyester-based rigid urethane foam is included. Circle No. **151.**

Shrinkable Transparent Film

The Dobeckmun Co. offers information on its new Saran Wrap-S, a shrinkable transparent film for packaging fresh frozen poultry, fish, cured and processed meats and cheeses. To package with the new material, the product is placed in the shrinkable bag or tube, a vacuum is drawn, and the package is clip-sealed. When the filled package is exposed to heat, the wrap shrinks, making a skin-tight package. Circle No. **152.**

Packaging Machinery Heating Units

Vulcan Electric Co. has a 34-page catalog on its complete line of electric heating units, glue, and wax melting pots. Units are manufactured for heating applications in packaging and sealing equipment. Circle No. **153.**

Cottoning Machine

The Lakso Co., Inc., has released a circular on its Model 52 cottoner, a machine which places cotton in bottles filled with tablets or capsules at speeds up to 100 bottles/min. It can handle bottles up to 2½″ wide and requires only three change parts for varying bottle sizes. Circle No. **154.**

Reusable Inner Packs

Celotex Corp. has a twelve-page catalog describing the properties and uses of Celotex Industrial Fibre Board as an inner pack to brace, block, and cushion products of almost every shape and weight. Liberally illustrated, the catalog pictures inner packs used for aircraft, automobiles, and electronic parts. Circle No. **155.**

Automatic Weigher & Filler

Richardson Scale Co. has Bulletin H-1 describing its Holm Model SS automatic weighing and filling machine for production packaging of free and non-free flowing materials. The bulletin tells how this bench model operates automatically at the rate of 18 to 20 weighings/min. Specifications for the unit are listed and its component parts described. Circle No. **156.**

Vibrating Screens

Syntron Co. has published a 14-page booklet containing complete data and specifications for its line of 9 standard model vibrating Grizzly Bar screens, 48 sizes of "Concentric-Action" vibrating screens, 7 screening feeder models, 20 standard "unbalanced pulley" vibrating screens, 4 standard model electromagnetic vibrating screens and shaker screens. Circle No. **157.**

Make-Your-Own Plastic Vials

Celluplastic Corp. offers a bulletin describing a do-it-yourself packaging material for making small plastic vials. Useful particularly for packaging samples, the process involves clipping plastic tubing to whatever size is desired and fitting the open ends with plastic plugs. Tubing is available in lengths up to 18¼″ and in diameter ranging from ⅜″ to ⅞″. Circle No. **158.**

Tablet Filling Machine

U. S. Automatic Box Machinery Co. is offering an information sheet on its Model TBS, a straight line, fully automatic tablet and pill counter and filler. It will count any number (odd or even) into bottles, cartons, boxes, and other rigid containers. Changeover of count, container, or product can be made quickly. Modifications allow its use for either large volume speed packaging or for packaging many different shapes and sizes in different containers. Circle No. **159.**

Side Handle Multiwall Bag

Hudson Pulp & Paper Corp. has lit-

erature on its new multiwall shipping bag with double side handle. The bags are used in product packaging for 50 lb. capacities. The innovation is said to make loaded bags easier to carry and permits controlled pouring. Circle No. **160.**

Fabricating Facilities

Taylor Fibre Co. has released a 12-page booklet entitled "why," which describes through text and photos the facilities of its Pennsylvania and California fabricating divisions, which produce laminated plastic and vulcanized fibre parts. Circle No. **161.**

Wide-Range Laboratory Bath

American Instrument Co., Inc., offers Constant Temperature Catalog 500 in which its new dual purpose, wide-range laboratory bath is described. The unit can be used as a controlled constant temperature bath or for circulating controlled-temperature liquids through external apparatus such as condensers and water-jacketed mixers. The bath contains both refrigerating and heating elements, and has a temperature range of from -29° C. to 71° C. It is said to be ideally suited for cooling water for X-ray and other photographic film processing, providing cooling water for low temperature viscometer tests, etc. Circle No. **162.**

Edge Protection

Flex-O-Lators, Inc., offers samples and complete specifications for a recently developed cushioning material designed especially for protecting sharp, breakable, or easily chipped edges of items. Called Edg-Pak, the material slips over all kinds of edges, steel strapping or tubing and is held in place by its cushioned inner spring construction. It can be used on edges up to 3/4" thick. The material can be ordered in specified pre-cut lengths or in rolls, and is is reusable. Circle No. **163.**

Pressure Sensitive Labels

Pee Cee Tape & Label Co. has released a new catalog of its self-adhesive labels. Mounted on flat sheets, these pressure-sensitive labels may be written or stamped before label application. Over 65 stock label designs are available. Circle No. **164.**

Bag Packaging Equipment

Black Products Co. has a data sheet on its Black Diamond airflow valve bag packer, a unit which makes use of the fluidizing principle of conveying material. Also available in the Airflow line are machines for the packing of free flowing, dry granular, and powdered materials. These units handles bags weighing from 25 lb. to 100 lb. packed weight. Circle No. **165.**

Self-Sealing Barrier Material

Mid-States Gummed Paper Co. has a technical data bulletin on Green Core Super Cloth Rap. This is a greaseproof, waterproof, flexible, self-adhering barrier material consisting of cloth, greaseproof film, and compounded microcrystalline wax. It meets MS MIL-B-121A. The results of eleven test specifications for this material are included. Circle No. **166.**

Non-Toxic PVC Stabilizer

Ferro Corp. has samples, complete data sheets, and prices available for Ferro 763, a non-toxic, U. S. Food and Drug Administration-accepted stabilizer developed for use in polyvinyl chloride food packaging materials. It is said to be especially useful where long term heat stability is required. It is recommended for calendaring, extrusions, and plastisols. Ferro 763 is a white paste compound with a specific gravity of 1.00 and a bulking value of 0.175 gal/lb. It may be used at operating temperatures of 365° F. to 385° F. Circle No. **167.**

Bottle Inspection Machine

Mayer Production Engineers, Inc., offers information on its Twin-Beam bottle inspection machine. Recent improvements on this machine include an automatic bottle gate which allows only rejected bottles to be discharged from the conveyor; electronic indexing; time delay ejection control, and accumulating table and guides for smoother discharge of rejected bottles. Circle No. **168.**

Versatile Wrappers

Crompton & Knowles has published an 8-page bulletin that describes 4 models of its wrappers. They wrap round, oblong, oval, square, or irregularly shaped products, either hard or soft. These units handle cellophane, glassine, plastic films, and paper. Speeds range up to 140 wraps/min. Circle No. **169.**

Flexible Film Packaging

Print-A-Tube Co. has issued a Packaging Machinery Manual for use in conjunction with polyethylene-coated films. The properties of six different poly-coated films, their specifications, and prices are given. Also included are photographs and descriptions of a number of packaging machines especially designed for use with poly-coated films. Circle No. **170.**

MSU steps up drive for packaging school funds

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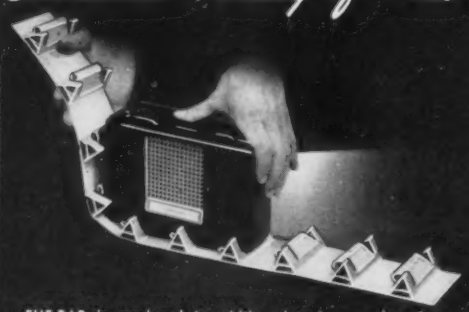

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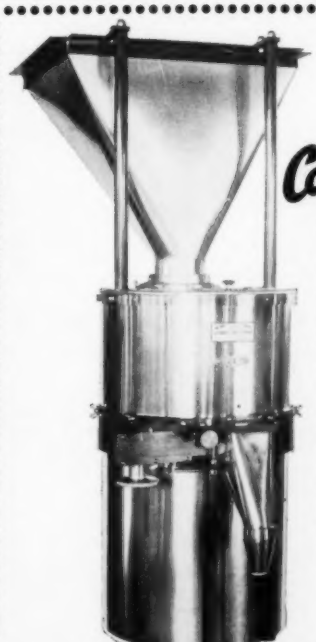

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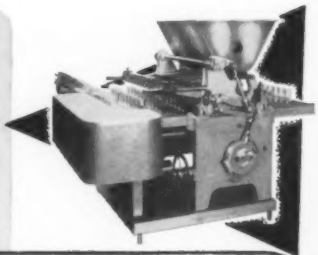

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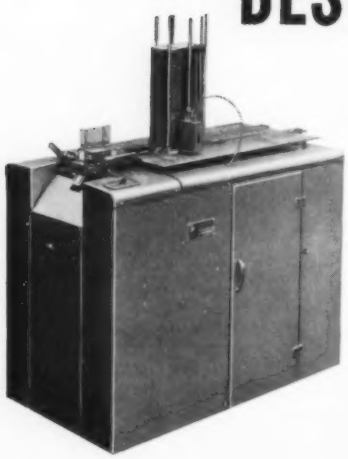

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Practical pointers to packaging line efficiency

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Line Requires Five Operators

This line requires five girls to operate it. One handles the unscrambler and attends the filler, capper, and labeler. The next one oversees the carton set-up machine and automatic cartoning. Two girls do nothing but pack the paper inserts into the cartons. And the fifth girl handles packing of the shipping containers. Should we eliminate the paper inserts, we could run the line with three persons, but we feel it is an absolute necessity to supply printed instructions to the customers.

Acknowledgements

Much credit is due R. D. Klein, general superintendent, and C. T. Martin, chief engineer, who are responsible for making these operations possible. (*End*)

What we think

Each packaging organization has its own special job to do

The time is past due for each of the three leading groups in the packaging field to (1) bring its own goals and activities into sharper focus, and (2) work much more closely with the other two groups. Packaging Institute, American Management Association, and Society of Packaging and Handling Engineers (the new name of SIPMHE) should be doing more effective work in their respective spheres. And since any organization is merely the reflection of its membership, all of us in packaging must help these groups make the most of their opportunities.

Up to now there has been too much groping for direction. Packaging Institute has a remarkable galaxy of talent within its superb network of technical committees. We think it should stick to its knitting of a closer network of technical and operational packaging activities. It should not decimate its forces by its forays into, say, merchandising and package surface design. Let there be no tampering with its technical operations.

American Management Association is an acknowledged leader of management education for men in business. It can make contributions of incalculable value to packaging by approaching the subject from a management point of view. It has no business trying to get into the technical operations sort of thing so ably covered by Packaging Institute committees.

In fairness to AMA, we must say that its clinics and technical programs have been of great value. Those we attended were handled with skill. But such programs tended to take AMA off the reservation. For a while we feared its successes in technical programs might lure it into dissipating its efforts by thin-spreading. Now, however, AMA appears to be getting back into the main stream of its fine management education activities.

Similarly, we think that the Society of Packaging and Handling Engineers must plot its own course. It has done much to promulgate professionalization among packaging engineers, and deserves great credit for focusing attention on structural and functional packaging—especially of the non-consumer kind. But SPHE has no business inviting merchandising and package surface design experts to its platforms.

Lest anyone think we place too narrow an interpretation on any group's service to its members, we must emphasize that each group has an obligation to broaden the background of its members. But this broadening must be within a well-defined purview in each group.

We are tired of attending some Packaging Institute function and hearing out-in-the-hall conversations about what AMA might be doing. We no longer want to hear any speculative mutterings about PI among those attending an AMA function. And let us have no more murmurings by SPHE folks about what the other groups might do—or think.

It's time the leaders talk things over

We wish that we could get each group's top elective officers and its chief executive (i.e.. paid) officer to sit around some table and develop a better basis of understanding. And emphatically we are not suggesting the chiefs of these groups closet themselves merely to carve up the packaging field into three convenient parts. What we do urge is that each group recognize the special qualifications of the other two and see how they complement its own unique ability to contribute to packaging.

Our fast-moving technical and operational packaging field can no longer afford the luxury of indecisive organizations. It is the fault of all of us that these groups are not following clear-cut programs. We cannot blame either the elective councils or the paid officers when we as groups fail to interpret our needs and desires to them. Once we recognize that each organization has a special part to play, we are on the right track.

Maybe what we need is some sort of federation of packaging organizations. Such a plan would have many advantages. In the meantime, let's get started by getting together the top people in each group so that we may (1) settle the broad outlines of the purpose of each group; (2) recognize the value of specialization without dissipation of effort, and (3) insist that each group quit worrying about the other two and proceed with its own job.

Bruce Holmgren

Editor

"VISQUEEN film makes a 'Cracker Jack' package!

TRADE MARK

Saves us money. Gives us higher quality bags."

"Our switch to VISQUEEN 'Q' film gave us a low initial cost. We have far less breakage, too. Put together, these two savings have cut our packaging cost considerably.

"The superior clarity of VISQUEEN 'Q' film completely discloses the eye-catching, sales-generating qualities of Campfire marshmallows and Cracker Jack popping corn.

"Vivid color printing—the best we've ever had—with no smudging or blurring, was another advantage we got with VISQUEEN film.

"We make 40 bags per minute on each of our Hayssen Compak machines, which seam the VISQUEEN film sheet and heat-seal the filled bags. Milprint, Inc., Milwaukee; Color Wrap Company, Cicero, Illinois; and CelluCraft, New Hyde Park, New York, supply VISQUEEN film to Cracker Jack Co."

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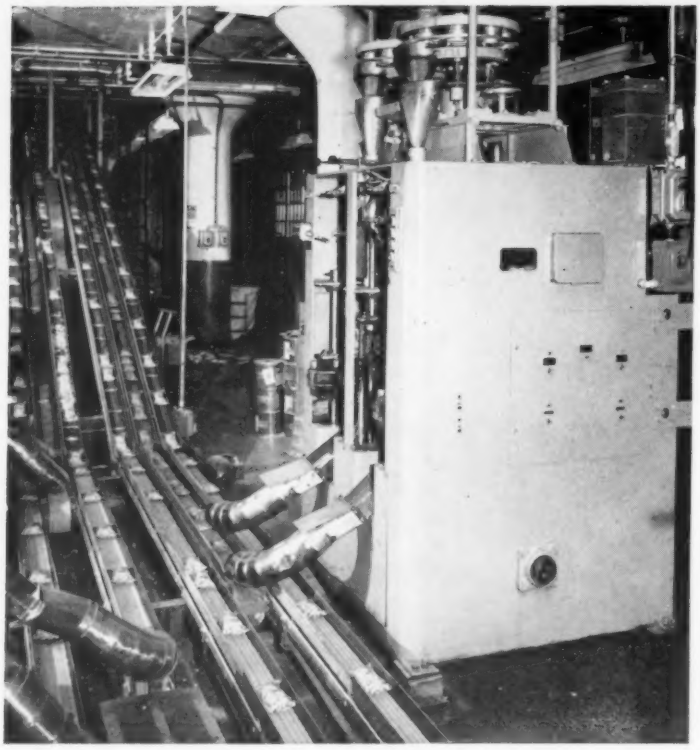


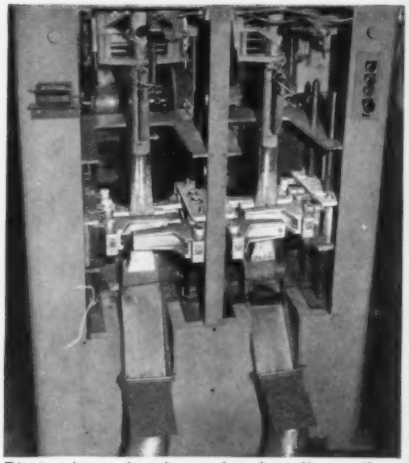
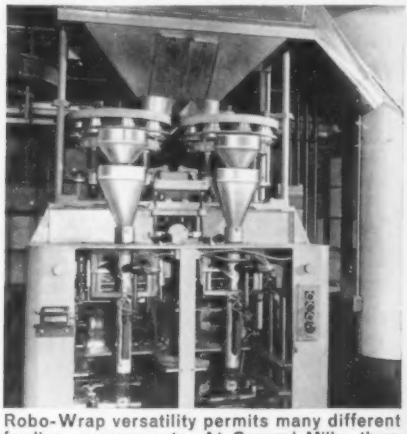


Photo shows hand-over-hand sealing action. Lower jaws, now disengaged, start to go up and pass on the outside of still-engaged pair of jaws.



Robo-Wrap versatility permits many different feeding arrangements. At General Mills, there is a volumetric feeder leading from storage hopper supplied from floor above.

Why General Mills chose Robo-Wrap for Pick-A-Pack

This new Robo-Wrap at General Mills' Chicago plant will soon be joined by 2 more machines—because it has been proved that Robo-Wrap increases the efficiency and economy of their packaging operation.

The Robo-Wrap forms, fills and seals pillow packages. Under production line conditions at General Mills, the Robo-Wrap cruises at 100 bags a minute and can run at 120. . . it provides a better seal and fewer rejects even at these high speeds because its unique hand-over-hand action holds jaws in sealing position for a longer time . . . it minimized work stoppages due to torn paper roll stock because the combination mechanical and hydraulic jaws exert a strong, jerk-free pull . . . it is easily adaptable to handle a variety of other products.

Robo-Wrap packages in cellophane, paper, poly, plastic or laminates. See how it can answer your needs for speed, dependability, easy maintenance and adaptability.

General Mills Pick-A-Pack Package offers five tasty breakfast foods—Wheaties, Cheerios, Kix, Trix, and Sugar Jets—in one attractive carton.

Write for Illustrated Robo-Wrap Folder that demonstrates features and advantages important to you.

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